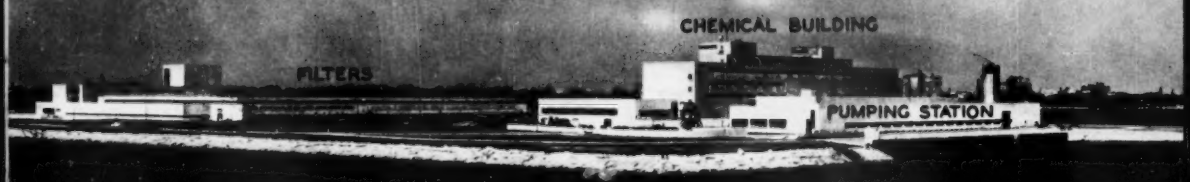
MAY 1949

The American City



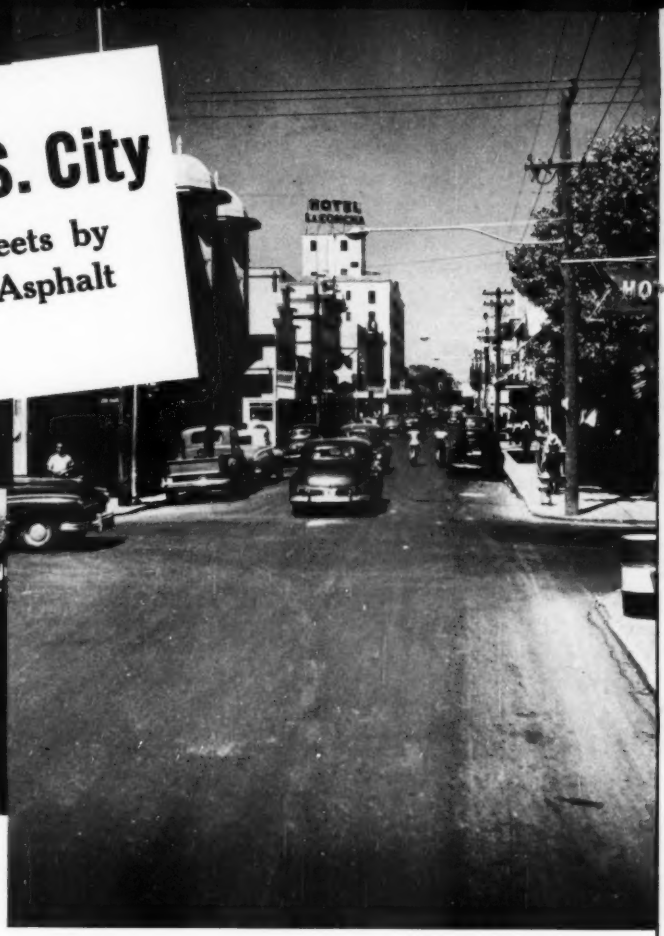
CHICAGO

Playing host to the nation's water-works men late this month at the annual meeting of the American Water Works Association, Chicago puts on display its new, precedent-establishing South District Filter Plant, shown here.

An article on page 103 tells why the plant was built and how it operates.

Southernmost U. S. City

salvages 41-year-old streets by resurfacing with Texaco Asphalt



New Texaco Asphalt paving in the business section of Key West, Fla., pleases motorists, stimulates civic pride. Capt. R. D. Spalding, City Manager, supervised the work.

—Photographs by Key West Photo Servic

Key West is the principal island of a chain, which extends from southern Florida into the Gulf of Mexico. It has the distinction of being located further south than any other city in the United States.

City officials of Key West were presented with a major paving problem recently. A number of streets in the business section were still served by brick pavements which had been laid back in 1908. Years of service had taken their toll and improvement of the streets had become mandatory.

Although uneven, the old brick paving was thoroughly consolidated, providing an excellent base. Key West laid a Texaco Asphalt leveling course over the center of the existing pavement, then resurfaced approximately 75,000 square yards of its old streets for their full width, employing a 1½-inch Texaco Asphalt pavement. Most of the aggregate for the new surface was provided by a spoil bank, the result of war-time dredging operations.

Key West is another of the 1500 representative U. S. cities whose streets have been paved during the past 45 years with resilient, durable Texaco Asphalt.

Two helpful booklets, which describe all types of Texaco Asphalt construction suitable for city streets, will be sent free to interested municipal officials by our nearest office.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17
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TEXACO REG. T.M.

TEXACO ASPHALT

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VOL. LXIV MAY
No. 5 1949

The American City

Issued Monthly by the American City Magazine Corporation 470 Fourth Ave., New York 16, N. Y.

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Duncan A. Scott & Co., *Representatives*

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Subscription $4 per annum to any part of the world
Single copies, 50c
Entered as second-class matter, July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A.

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The American City is indexed regularly by Engineering Index, Inc., and the Reader's Guide to Periodical Literature.

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THE MUNICIPAL INDEX and ATLAS, used in connection with the current advertisements in THE AMERICAN CITY, places officials in the most favorable position to obtain all types of available equipment and supplies from manufacturers who desire to serve municipal government departments. This 867-page annual is published by The American City Magazine Corporation, 470 Fourth Ave., New York 16, N. Y.

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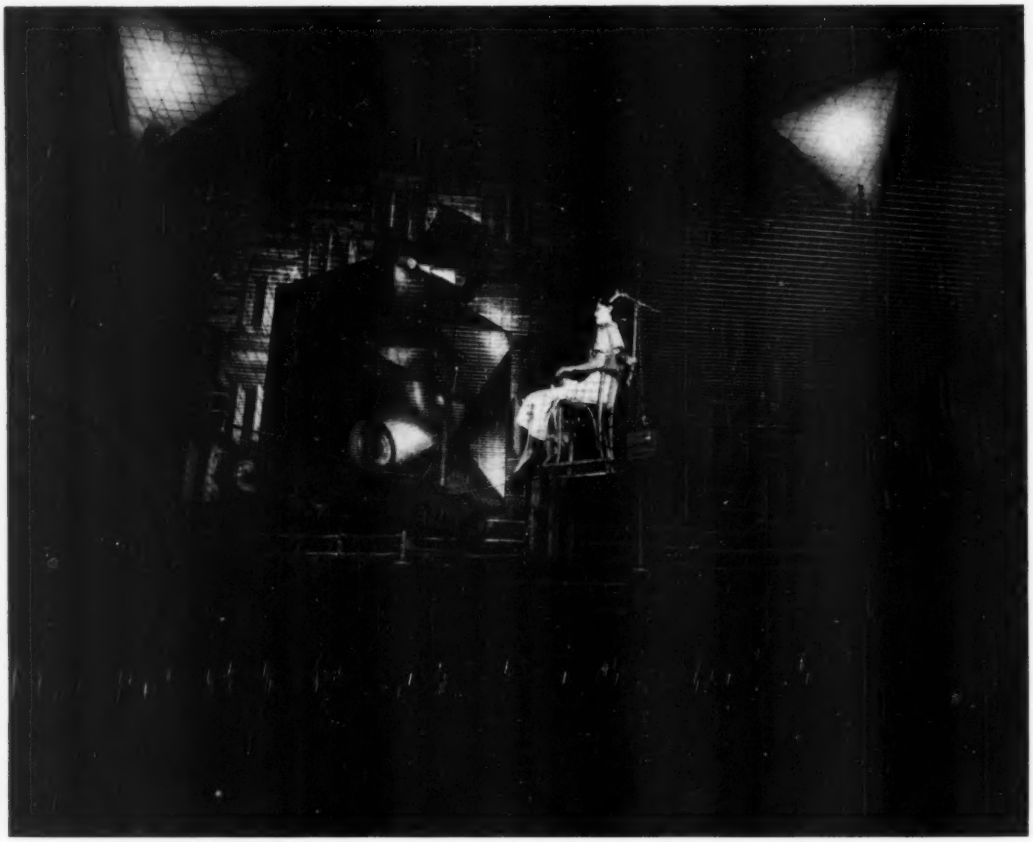

Your ear is our customer

WHAT DOES SHE HEAR UP THERE IN THE AIR? . . . *The young lady is suspended on a steel netting in a soundproofed room at Bell Telephone Laboratories. From the loudspeakers in front of her come sounds differing in frequency and intensity. She seeks to tell one from another, recording her judgment by pressing a switch. Meanwhile, as a check on what happens within her ear, electrical measurements of the same sounds are made by picking them up through a small tube just inside the ear canal. Tests like this on many people help build easier listening into your telephone system.*

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Our Municipal Notebook

FWA Administrator Urges Enlarged Shelf of Local and State Public Works

WITHOUT assuming an alarmist attitude towards a possible business recession, Major General Philip B. Fleming, Administrator of the Federal Works Agency, is urging states and municipalities not to rely too much on the federal government to take up the slack should a depression threaten. In an address at the annual meeting of the Chicago Building Congress on March 10, General Fleming said in part:

> If the volume of private construction anticipated for this year were cut in half—it has fallen much more than that in previous slumps—we would need $11.6 billion of public construction (federal, state, and local) to maintain construction employment on an even keel. Our present reserve of public works would bridge little more than one-third of that gap.
>
> The last depression taught us that without adequate planning it took many months to put even a handful of men to work on useful public projects. As matters stand today we simply are not ready with plans which could both stabilize the construction cycle and help to bolster the business cycle. In general, the states and municipalities are not ready and the Federal Government is not ready. . . .
>
> For many reasons I think it is essential to have a much larger reserve of state and local public works than we now have. Moreover, I think such a reserve should include a large proportion of buildings, blueprinted and ready for contract letting. This type of construction can go forward on innumerable sites simultaneously and can provide the largest and best-balanced volume of employment to replace a falling off in private building.
>
> It is the construction of buildings, plus highways and sewer and water projects, rather than the huge long-range federal projects, that afford the quickest, most effective and broadest means of construction reemployment.

In this Chicago talk General Fleming urged reinstatement of the Advance Planning Program, administered by FWA's Bureau of Community Facilities, the Congressional appropriation for which lapsed on June 30, 1947. This recommendation is in line with the introduction in the U. S. Senate, on January 27, 1949, by Senators Pepper and Green of S. 707. This bill, and a companion bill by Representative Morrison in the House HR. 3086, concern the advance planning of public works at the local level (excluding housing).

Some municipalities will need such federal aid in planning their local shelf of public works—but many others can get ready to meet a possible unemployment emergency without such aid.

As Robert Moses Sees It

Another current discussion of timing and advance planning of public-works projects appears in the report on the proposed Federal Department of Works, prepared by Robert Moses for the Commission on Organization of the Executive Branch of the Government. To quote in part:

> Only projects which are not indispensable or urgent but which are desirable but not at the moment essential can be put on the shelf of plans. *Municipalities cannot hold back vital sewer and incinerator, housing, school, hospital, health, transportation, and other "must" projects until there is a depression.* In certain instances it may be possible to tie the shelf of plans to the national production index insofar as projects which can be postponed are concerned. That is precisely the kind of study which should be made by the Division of Planning in the proposed Department of Works. Unfortunately, the purely automatic accounting devices and formulas to control public spending which have all the charm of simplicity, exactness, and ease simply don't meet the human, the unexpected, and the political contingencies as they arise.
>
> Doubts have been expressed as to the validity of advance plans after a lapse of several years and the question of obsolescence has been raised. Experience has, however, taught us that if the projects are selected intelligently and represent a continuing need, and if the plans are made by competent technicians and checked after the preliminary stage, there is no reason to anticipate any substantial loss through obsolescence, variations in taste, new inventions, and higher standards. Even if 15% of some designs must be revised, advance planning is fully justified. Projects ideal for advance-planning purposes include streets, slum clearance and low-rent housing, roads and highways, hospital and other buildings, sanitation and water-supply projects, airports, port facilities, recreation, and the huge regional development programs which include the improvement of navigation, flood control, reclamation, power, and irrigation projects.

EDITOR'S NOTE: As this issue was going to press, it was announced that General Fleming will resign as Federal Works Administrator to become chairman of the Maritime Commission. He will be succeeded by Jess Larson, War Assets Administrator.

The American City Quiz

Match Wits with the Experts

QUESTIONS

1. ***Is there any community that disposes of all its garbage by kitchen grinders?***
2. ***Where should residential sidewalks be placed?***
3. ***How much of gas-tax funds are used to maintain city streets?***
4. ***What is the relation of the maximum use of water to the average?***
5. ***Is there any easy way to get tree roots out of sewers?***
6. ***How much sludge gas is required to operate a gas engine?***
7. ***How much of a load does air-conditioning equipment place on a city's water supply?***
8. ***What is the percentage of water in domestic sewage?****
9. ***What can be done to traffic lanes to make them safer for night driving?***
10. ***What precautions should be observed when starting a new incinerator?***

* This information was obtained from *Sewage Gas*, published by the Division of Sanitary Engineering of the Indiana State Board of Health.

(Answers on Page 7)

Don't use the Taxpayers money for well sites

See How Boise Saved. There's actually a pump delivering 950 gpm against a 240 foot head at this Boise, Idaho, intersection. Cars drive over it . . . space is saved . . . taxpayers' dollars are saved. See the BJ movie at the AWWA Convention and learn how you can save with the exclusive BJ Submersible.

There's no need to invest in additional real estate just for well sites. Now you can put your well at the most advantageous location by using the exclusive BJ Submersible Pump. Designed to operate completely underground, a BJ Submersible can be installed anywhere . . . under streets, park lawns, alleys, parkways, airport runways, or in river beds . . . wherever you desire to locate the well.

The precision-assembled BJ Submersible is an oil and mercury sealed motor-pump unit suspended in the well by the discharge pipe. The close-coupled motor and pump are sealed in the well against contamination and operate *completely submerged.*

Suitable for any well-depth, a BJ Submersible can be installed anywhere. Operates noiselessly. No pump house is needed. The installations are tamperproof. And a Submersible provides unique operating economies during its lifetime utility. Over 80 cities have proved the economy and dependability of these pumps. Write today for complete information.

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NEW SUBMERSIBLE COLOR MOVIE . . . will be shown during the AWWA Convention. See how the patented features of this outstanding design make possible the operation of these motor-pump units totally submerged in the well. Phone BJ's Room, Stevens Hotel, for the motion picture schedule.

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Thirty Years Progress in Maternal and Child Health

WHEN the Department of Health of the State of New Jersey established its Division of Maternal and Child Health, in 1919, New Jersey's infant mortality rate was 84.7. In 1948 it was 26.6. This means that of the babies born alive thirty years ago, three times as many died during their first year as now succumb.

Dr. Julius Levy, who has headed up this work in New Jersey ever since its inception, estimates that if the present infant mortality rate could have existed throughout this thirty-year period, 55,843 babies who died in New Jersey during their first year would have survived.

During the same period a substantial reduction was also achieved in maternal mortality rates. From 6.1 maternal deaths per 1,000 live births in 1920, the figure dropped to 0.8 in 1948.

In a recent report, "Thirty Years' Progress in Maternal and Child Health," Dr. Levy says in part:

> From the very outset we considered that the keynote of this work of education and prevention was through properly guided and directed Maternal and Child Health nurses. We felt that such nurses were really needed in communities of all economic levels, as it was our experience that the need for education of mothers in the understanding of infants was not peculiar to the poor. A plan was developed, therefore, of placing Maternal and Child Health nurses in communities, especially rural areas, with the understanding that they would as rapidly as possible take over the payment of the nurse's salary. Then we could, with the same amount of money appropriated for this work, place Maternal and Child Health nurses in additional communities by using it as a rotating fund.

The latest addition to the activities of the Division of Maternal and Child Health is "Anticipatory Guidance." Dr. Levy comments:

> It seems that this phrase was first used in this state. It describes that type of mental hygiene which tries to deal with prevention and not cure. We are merely applying to the newer knowledge of the importance of the first years in emotional development an attitude that was similarly applied to the physical field in the earlier days; just as through education we prevented summer diarrhea, rickets, scurvy, malnutrition, and helped in the prevention of diphtheria and whooping cough by immunization, vaccination, we believe that the place and time to begin to prevent maladjustment, juvenile delinquency, mental illness and criminality, is during the early period of infancy.

In concluding his statement of thirty years' progress, Dr. Levy says:

> Many factors have contributed to the results briefly reviewed—pasteurized milk, clean water, improved sanitary and housing conditions, general education, more efficient and competent physicians, new and powerful drugs, but I still like to believe that no small contribution has been made in this state by Maternal and Child Health work organized and developed under the auspices of the New Jersey State Department of Health.

Public Servants Week June 6 to 11

PUBLIC Servants Week will be observed throughout the nation this year the week of June 6 to 11. Sponsored by the American Federation of State, County and Municipal Employees, the observance is part of a long-range program to acquaint citizens of the various units of government with the services they get for their taxes.

Last year during the first Public Servants Week the governors of 26 states participated actively. In numerous communities open house displays were held by city and county departments. Specially conducted tours of city facilities were staged, and there were demonstrations of new and improved equipment and procedures by which services are rendered.

Plans are in the making this year for coordinated statewide programs. Locals and councils of the Federation are working to assure programs that will far exceed last year's efforts. In some municipalities, rallies are being planned at which awards for long and faithful service will be made to public employees.

EDWARD N. DOAN, *Executive Assistant American Federation of State, County and Municipal Employees, Madison, Wis.*

New Officers of Southern Commercial Organization Executives

AT ITS annual meeting in Winston-Salem, N. C., March 27-29, the following officers were elected by the Southern Association of Commercial Organization Executives (new name of the Southern Commercial Secretaries' Association):

President, George E. Schneider, New Orleans, La.

Vice-Presidents: First, J. Malcolm Bridges, Richmond, Va.; Second, Scou R. DeKins, St. Louis, Mo.

Secretary-Treasurer, William S. Johnson, Jacksonville, Fla.

The American City Quiz

Answers to questions on Page 5

1. Crestview, a suburb of Kansas City, Mo., has garbage grinders in every home.

2. Frank Harley, Civil Engineer at Fair Lawn, N. J., says that they should be located 5 to 10 feet from the curb where pedestrians prefer to walk.

3. About 5% finds its way into city street construction, according to the Public Roads Administration, notwithstanding the fact that at least half these funds come from cars operated on city streets.

4. The maximum daily use, says L. R. Howson, of Alvord, Burdick and Howson, Chicago, is 50% greater than the average day for the year. The maximum peak hour is 50% more than the maximum daily average.

5. John Hood, Superintendent of Sewage Treatment, Ridgewood, N. J., eliminates them by assigning a man to go to each home and place two pounds of copper sulphate in the toilet. The tree roots die and break away. The shade trees remain undamaged.

6. Henry W. Taylor, New York City consulting engineer, states that gas engines require approximately 25 cubic feet of gas per kw-hr generated.

7. According to studies by Elwood Bean, Principal Assistant Engineer of the Philadelphia Bureau of Water, air conditioning will require 0.05 gpm per ton of refrigeration if good conservation is practiced. Without conservation, through the use of spray ponds, evaporative condensers, or other devices, it may take as much as 2.5 gpm.

8. Normal domestic sewage contains over 99.9% water.

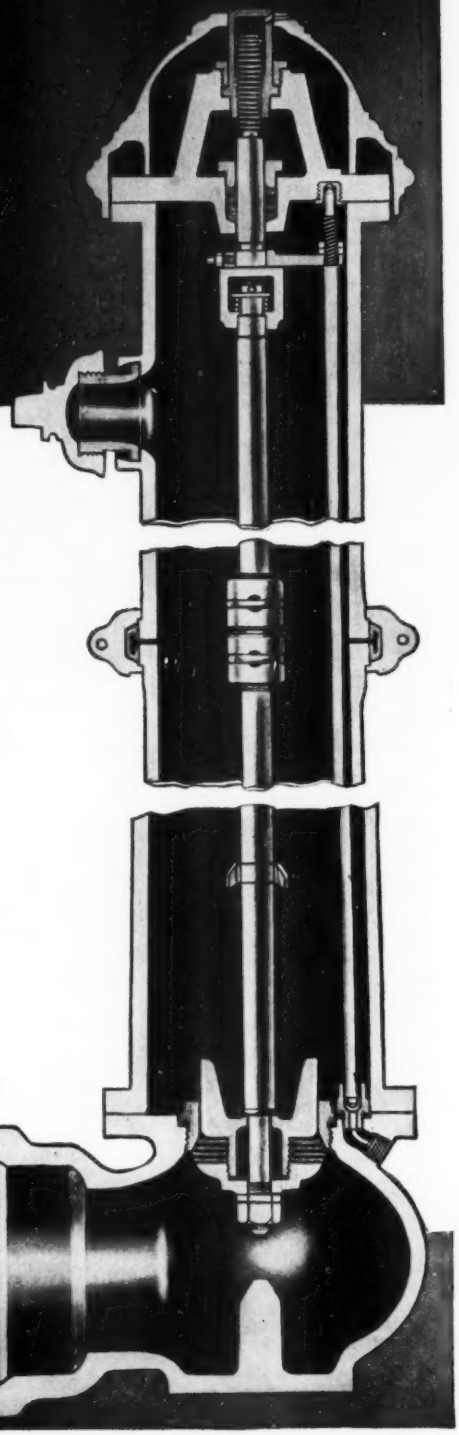
9. Lieutenant J. H. Allen, Traffic Division, Jacksonville, Fla., discovered that he could reduce traffic fatalities by beading traffic-lane markings so that they are visible at night. He combined this with stricter enforcement of the traffic rules.

10. Robert Stellwagen, Detroit consulting engineer, recommends that you should heat the furnace slowly, raising the temperature by 100° increments at one-day intervals until normal operating temperatures are reached. He reports that the refractories are easily damaged at temperatures between 400° and 1,000° Fahrenheit. He recommends further that you should build fires in the new furnaces in the end furthest from the combustion chamber to insure good over-all heating.

Send in your suggested questions with the answers on municipal topics for use in this feature. The AMERICAN CITY will make a small payment for each question accepted.

THE

SMITH *Protectop* HYDRANT



Collision damage quickly repaired

Breakage is confined to easily replaceable frangible stem and stand pipe couplings.

Frost can't heave the hydrant

The taper on the stand pipe breaks the grip as the frozen ground rises.

Drainage under pressure can't undermine the hydrant

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Maximum delivery

The stand pipe area is more than twice that of the hydrant valve area.

27

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ESTABLISHED 1896

EAST ORANGE, NEW JERSEY

When the Voter Cries "Economize!"

"Economize!, Economize!"
These are the loud, insistent cries
Of people bent on keeping down
The cost of the running of their home town.
Their cries make sense if they're intending
To call a halt to wasteful spending;
But such folk mostly are not giving
Due thought to Hometown's cost of living.
A town's a business enterprise:
It has to purchase vast supplies
(Like pumps and meters and trucks and tools,
And standards for lighting and buses for schools);
It has to build and to maintain
Parks, roads, schools, sewers in its domain;
Nor can its payrolls be as low
As they were fifteen years ago;
For does it not cost a fireman, clerk,
Or "cop" as much as those who work
For private firms to rent a house,
Buy food and clothes for kids and spouse?

Let those who shout, "Economize!"
Consider—and modify their cries:
How can the budget of their town,
With all things up, be coming down!

—A. S. FLAUMENHAFT

A Sign That Appeals

VISITORS to the Mountain Lake Sanctuary and Singing Tower near Lake Wales, Fla.—the magnificent gift of the late Edward Bok to the state and nation—are struck with the wording of the sign at the entrance:

> THE BIRDS AND THE FLOWERS ARE UNDER THE INDIVIDUAL PROTECTION OF EACH GUEST OF THE SANCTUARY

If any public park has an even better sign of this kind, THE AMERICAN CITY would be glad to have its wording.

Architecture and Public Health Twenty Centuries Ago

WHEN Marcus Vitruvius Pollio, Roman architect and engineer, wrote, during the first century B.C., what is now the earliest extant work on architecture, he could hardly have anticipated that his forward-looking ideas would be quoted in a talk at Columbia University twenty centuries later. But Dr. C.-E. A. Winslow, Editor of the *American Journal of Public Health*, found in Vitruvius an excellent introduction to his discussion of the "Contributions of Public Health to Planning," at the Columbia Conference on Planning, on April 9. Using as his source, *Vitruvius on Architecture* (Edited by Frank Granger, G. P. Putnam's Sons, New York, 1931), Dr. Winslow quoted:

The architect must know the art of medicine in its relation to the regions of the earth (which the Greeks call climate); and to the characters of the atmosphere of localities (wholesome or pestilential), of water supply. For apart from these considerations, no dwelling can be regarded as healthy.

The water supply also, and other related matters, ought to be familiar to architects so that, before building is begun, precautions may be taken, lest on completion of the works the proprietors should be involved in disputes.

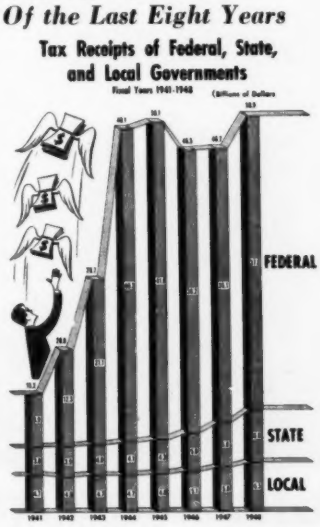
There will be natural seemliness if light is taken from the east for bedrooms and libraries; for baths and winter apartments from the wintry sunset; for picture galleries and the apartments which need a steady light from the north.

When the walls are set round the city, there follow the divisions of the sites within the walls, and the layings out of the broad streets and the alleys with a view to aspect. These will be rightly laid out if the winds are carefully shut out from the alleys.

When the form has been settled, a site as healthy as possible is to be chosen for the exhibition of plays or the festivals of the immortal gods, according to the instructions given in the first book for the healthy disposition of the city walls. For at the play, citizens with their wives and children remain seated in their enjoyment; their bodies motionless with pleasure have the pores opened. On these the breath of the wind falls, and if it comes from marshy districts or other infected quarters, it will pour harmful spirits into the system.

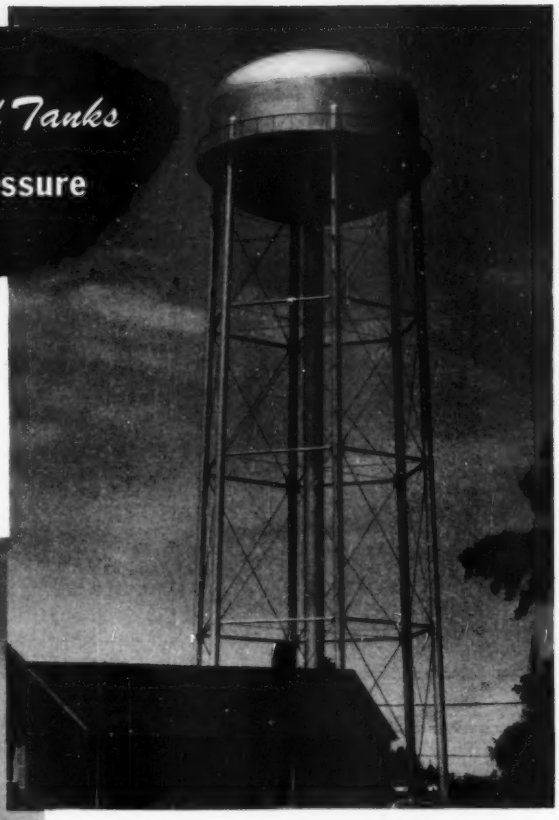
The open spaces between the colonnades under the open sky, are to be arranged with green plants; because walks in the open air are very healthy.

The Tax Record Of the Last Eight Years



The chart above is reproduced from *Facts and Figures on Government Finance*, 1948-1949, published by the Tax Foundation, 30 Rockefeller Plaza, New York 20, N. Y.

Two New HORTON *Elevated Tanks* provide gravity water pressure at *Salisbury*



Two Horton elevated tanks, a 1,000,000-gal. and a 250,000-gal. unit, were recently added to the water distribution system at Salisbury, N. C. The new tanks provide a supply of gravity water to improve pressures in the mains throughout the city. Salisbury can expect several benefits from its improved water system, including lower pumping costs, more uniform pressures, and a dependable water supply for fire protection.

The 250,000-gal tank at Salisbury, shown above, is an ellipsoidal-bottom tank of special proportions, 125 feet to bottom. The 1,000,000-gal. tank at the left is a Horton radial-cone-bottom unit, 140 feet to bottom, utilizing a design which makes it possible to build large capacity tanks which do not have excessive ranges in head. For instance, this larger tank has the same range in head as the 250,000-gal. unit. The welded steel construction used in both tanks is specified for durability, simple maintenance and clean appearance.

The complete line of Horton elevated tanks includes standard sizes from 5,000 to 2,500,000 gallons for both municipal and industrial installations. Write our nearest office for complete information.

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Houston 2.....2101 National Standard Bldg.
Los Angeles 14.....1503 General Petroleum Bldg.
New York 6.....3308—165 Broadway Bldg.
Philadelphia 3.....1616—1700 Walnut Street Bldg.
Salt Lake City 1.....1501 First Security Bank Bldg.
San Francisco 11.....1233—22 Battery Street Bldg.
Seattle 1.....1301 Henry Bldg.
Tulsa 3.....1625 Hunt Bldg.

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PENNSYLVANIA

Water Supply and Treatment

Lewiston's Fluoride Treatment For Dental Protection

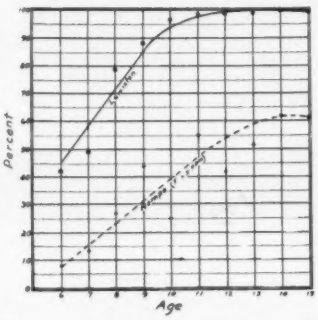
FLUORIDES have been applied to the Lewiston, Idaho, water supply for a little over one year, according to the recent report of W. P. Hughes, city engineer and water superintendent. The program has proceeded without difficulty. Some trouble arose over the feeding. The light grade of fluoride was purchased to start the program, and when damp weather came in the fall, it would not feed satisfactorily. The dense material feeds without trouble.

The program has been well received by the public and the dentists. None of the dire predictions made by a few at the time the program started has yet developed, Mr. Hughes reports. The dentists strongly support it, and the most frequent comment is that it is too bad that such a program was not available long ago.

Mr. Hughes' department has laboratory facilities and trained personnel to do the necessary control work and analysis, and to maintain records which go with such a research project. For this reason it has received the support of state and federal authorities.

Through arrangements made by the State Health Department, the U. S. Public Health Service sent Dr. Walter Pelton, Senior Dental Surgeon and Dental Consultant from Salt Lake City, who, with the cooperation and assistance of local dentists, examined large groups of children in Nampa, Lewiston, St. Maries, and Coeur d'Alene for decayed, filled, and missing teeth. This survey revealed that Lewiston and the other two northern cities have an unusually high rate of tooth decay which they attribute to lack of fluoride in the water supply. The rate of decay of children's teeth in Lewiston is nine times that of Nampa.

The Nampa water supply contains 1.5 parts per million of fluoride. The Lewiston water supply contained no fluoride previous to the time of the examination. The graph shows a comparison of the results of the surveys in the two localities. The examination, being based on the child having at least one decayed, filled, or missing tooth, does not give a true picture. Many Lewiston children have more and larger cavities, while in Nampa, the cavities were generally very small and the teeth of the children much better in general. As shown in the graph,



Curves showing the percentage of children with at least one decayed, filled or missing tooth. The Lewiston water supply contained no fluoride at the time of the examination, and Nampa has 1.5 ppm of natural fluoride.

nearly 40% of the children in Nampa do not have a single decayed, filled, or missing tooth.

It is expected that the succeeding examinations taken every few years of the children who have been born here, and who have lived here all their lives, will show an increased percentage of children in the 15-year-old bracket free from dental caries. In ten years or so, the conditions should be comparable to those of Nampa.

Russian and U. S. Engineers Agree

IN international circles, diplomats seem to have the utmost difficulty getting their Russian colleagues to agree to a proposition unless it was of a type approved by the Politburo. But in engineering circles, Chicago's Assistant City Engineer F. C. Gordon didn't seem to run into that same sort of difficulty. The South District filter plant provided the setting (see p. 103).

Mr. Gordon's contact with the Russians took place shortly after the end of the war. At that time, when relations between Moscow and Washington were more friendly, a group of Soviet engineers were touring the United States with the full approval of our State Department. They visited Chicago and included an inspection of the South District Filtration plant in their visit. Mr. Gordon was their guide during their tour of the plant, then in the process of construction.

One of the engineers, he relates, was very serious and solemn. During his visit he never cracked a smile—except once. This was during the time when he was being shown the plans for the filtration building. The Russian pointed his finger at one part of the plans and demanded an explanation.

"That," said Mr. Gordon, "is an expansion joint built into the structure to allow for the natural expansion and contraction expected." Then he went on to say, "We have had a good many discussions on the use of the joints. A lot of us are undecided whether expansion joints in buildings are really necessary."

At this point the Soviet engineer permitted himself his one smile. "The same in Russia," he said briefly.

Chlorine Institute Passes Quarter-Century Mark

A QUARTER-CENTURY of service to the municipal and industrial field was noted by the Chlorine Institute at its annual banquet held recently in New York. And a quarter-century of service as president of the Institute was noted by S. Willard Jacobs, vice-president of the Niagara Alkali Co., as he turned over the presidential reins to R. W. Hooker, of the Hooker Electro-Chemical Co. Retiring President Jacobs reminded members of the Institute of advances made in chlorine packaging, shipment, and handling since the Institute was formed. He also called attention to the *Chlorine Manual*, recently published by the Institute, representing best practice and knowledge of chlorine use. New officers include:

R. W. Hooker, president; W. I. Galliher, vice-president, and R. T. Baldwin, secretary-treasurer. (Mr. Baldwin has served the Institute as secretary-treasurer during its full 25 years).

The following constitues the Board of Directors of the Institute for 1949: G. M. Dunning, Michigan Chemicals Corp.; F. W. Fraley, Diamond Alkali Co.; W. I. Galliher, Columbia Chemical Div.; R. W. Hooker, Hooker Electro-Chemical Co.; E. W. Haley, Southern Alkali Corp.; S. C. Harris, E. I. duPont de Nemours Co.; S. W. Jacobs, Niagara Alkali Co.; L. Neuberg, Westvaco Chemical Div.; R. S. Roeller, Pa. Salt Mfg. Co.; E. E. Routh, Mathieson Chemical Corp.; W. H. Sheffield, Innis, Speiden & Co., and H. W. Umphrey, Canadian Industries, Ltd.

General Chemical "ALUM"

For Treatment of Industrial Wastes

Treatment of industrial wastes to prevent harmful effects on public waters is becoming increasingly important. Throughout the process industries, scores of concerns have found a solution to their problem in the use of General Chemical Aluminum Sulfate.

Laundries, paper mills, dairies, textile mills, canning plants, oil wells and packing houses across the nation report General Chemical "Alum" useful in purifying wastes; coagulating and settling suspended matter; reducing coloring matter, including many dyes.

Fifty years of working with the water industry on chemical methods of clarifying water has given General Chemical extensive experience in the treatment of sewage and waste waters. This broad knowledge may be of value to you as it has to so many others.

Assistance of the company's technical service specialists is available on request—and without obligation. For help on your industrial waste treatment problems, write or phone the nearest General Chemical office.

50 YEARS OF SERVICE

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Sludge-Digestion Problems and Solutions

By B. V. HOWE
Consulting Engineer
Ripple & Stowe
Denver, Colo.

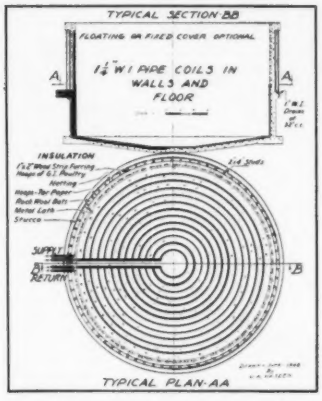
PROBLEMS of sludge digestion can be grouped under seven headings:

1. Corroded hot water coils that need replacing after 8 to 10 years of use.
2. Cold pockets in the digesters.
3. Formation of a thick undigestible scum blanket at the top of the digester.
4. Plugging the gas line with scum.
5. A sand and grit layer several feet deep in the bottom of the digester.
6. A high content in the digester supernatant.
7. A short detention period.

These groups became apparent after correspondence with more than 150 operators. They were amplified when the writer was given the opportunity of discussing the subject further in a paper delivered before the Rocky Mountain Sewage Works Association at its annual meeting in Cheyenne last fall.

With the exception of point #5, all can be corrected by providing a method of heating the sludge properly and by good storage space. Grease and oil entering the digester will break down and digest well if the temperature is raised from 95° F. to 104° F. Consequently, trouble with scum blankets, cold pockets, and supernatant liquor should be eliminated if the sludge is all kept at the optimum temperature.

The use of a sludge heat exchanger helps this situation. It allows the temperature of the sludge to be at the right level before it enters the digester.



Operators have found that coils in the digester floor help solve heating problems.

The practice of recirculating the sludge will tend to eliminate the cold spots. The sludge should be recirculated once or twice every 24 hours. However, it is not considered advisable to disturb the sludge in the lower area of a digester during the period of digestion, and consequently, the optimum temperature cannot exist in an annular ring in this area because of the cold walls. Heating coils help relieve this situation. However, most operators consider this an expediency only because the sludge bakes on the coils, thus reducing the rate of heat transfer.

It is shown from the operators' record that heating coils must usually be replaced in 8 to 12 years, this being an expensive, dirty, and dangerous job. In order to obtain a quantitative exchange of heat from the pipe to the sludge, the pipe, because of its small area, must have a high temperature (130°-140° F.). This causes sludge scale and deposits to bake on the pipe surface and also kills the bacteria adjacent to the pipe.

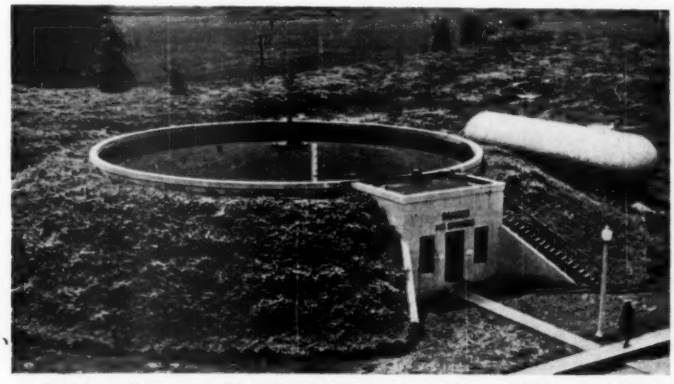
In order to overcome the effect of cold walls and floors, pipe coils can be embedded in the concrete walls and floor of the digester. The spacing of the pipe or coils must be calculated according to the heat losses, which will depend on climatic conditions, insulation and the size of the digester, volume of wet sludge added to the digester per day, and the ground temperature. Existing structures indicate a safe design figure is that between 5.0 and 5.5 BTU per square foot of wrought iron pipe surface per degree F. difference in mean water temperature of digesting sludge.

In considering the type of pipe, the coefficient of expansion is the most important for it should be as near as possible to that of concrete: 10 over 1,000,000 per unit length per degree centigrade. Wrought iron and steel have 11.4 over 1,000,000 for this coefficient—much nearer than is copper or aluminum.

Where the incoming raw sludge has a temperature of less than 60° F. it is probably advisable to pass the raw sludge through a small heat exchanger and raise it to 90° F. before pumping to the digester. When the pipe coils are designed they should be grouped into several banks and each bank controlled by a gate valve. The operator can then raise or lower the heat input to any section of the walls or floor. By raising the heat input to the scum blanket wall area, more rapid bacteriological action takes place, heavy greases can be kept in a liquid state, and digestion of the scum blanket is accomplished.

The source of the heat is, of course, from methane gas produced by the digester and the same gas boiler used to heat the control room office or garage by panel heating in the concrete floor.

When it has become necessary to clean digesters to replace the old heating coils, many operators have found a collection of sand and grit several feet deep. This serious condition can, of course, be eliminated by the installation of a properly designed grit chamber or automatic equipment for grit removal.



The lone digester used by the sewage-treatment plant at Anderson, Ind.

SKINNER-SEAL
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FOR MAKING
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—QUICKLY, EASILY!

For steel, cast iron and Transite pipe. Single massive bolt simplifies installation. Immediate deliveries from stock.

M. B. SKINNER COMPANY
SOUTH BEND 21, INDIANA, U. S. A.

SKINNER-SEAL SERVICE SADDLE

Street Cleaning and Refuse Disposal

The loader handily scoops up a windrow of leaves.

Snow, Dirt, Leaves, with Same Machine

Saint Paul mechanizes its street cleaning and snow removal work

THE disposal of leaves from city streets is a serious problem, especially for those cities located in the northern latitudes. The short period between the time when the leaves fall and the snow arrives with its winter freeze-up makes the work difficult.

In 1947, St. Paul (population 271,606, 1940 census) mechanized this leaf-gathering work. We purchased two Athey loaders, and since have used these two machines for loading dirt, removing snow, and hauling leaves. All operations have been performed at a considerable saving over hand methods.

Curbed Streets Work Best

We use these loaders on dirt streets, but find them most effective on streets that have been curbed. We are able to run along the curbing which serves as a guide and an apron. The curb also tends to windrow the leaves, eliminating the need for any other equipment.

In last fall's operation, we found that a loader and two 2-ton trucks and two laborers can clean an average of 4.25 miles of streets per 8-hour day. At our labor costs and taking a fair figure for truck and loader costs, this comes to $28.25 per mile.

During the winter of 1947-48 these loaders were used to considerable advantage in removing snow from the streets. The leaf-loading is part of the street-cleaning work performed under the Department of Public Works. Milton Rosen is Commissioner.

JOHN COTTER
Superintendent of Sanitation
Department of Public Works
St. Paul, Minn.

"Chipper" and "Beaver" Make Brush- and Stump-Clearing Easier

MAKING the chips fly is developing into a mechanical operation today. And the new "chipper" and "beaver" that put this chipping process on a mass-production basis makes large-scale labor saving possible in brush and stump clean-up work.

Both machines were demonstrated at the annual meeting of the New Jersey Federation of Shade Tree Commissioners in Newark recently. The "chipper" truck, made by the Asplundh Tree Expert Co., Jenkinstown, Pa., can convert a huge brush pile into a small pile of useable wood chips. Ralph Kaufman, who demonstrated the chipper, stated that it would reduce five loads of brush to a single truckload. The truck has a small opening on one side. The operators feed the brush into this opening. Limbs up to 5-in. diameter can be inserted without damage to the machine.

The "beaver" — so named by its Verona, N. J., inventors — cuts stumps 5 inches below the surface of the ground. The inventors, Leonard Anderson and Walter Spott, cut a stump in an hour that would have required 12 hours with two men working by ordinary hand methods.

PHOTO COURTESY OF EVENING NEWS PHOTOS, NEWARK, N. J.

Operators feed brush into the "chipper" truck. Inset: Richard Walter, Maplewood, N. J., park superintendent, is seen examining some of the chips.

WHY CITIES PREFER GAMEWELL
. . . SERVICE . . .

The Gamewell Company, Newton Upper Falls, Massachusetts. Founded in 1855

The largest organization in the world engaged exclusively in the manufacture of Fire, Police and Other Emergency Signaling Systems. 28% of our employees — highly skilled workmen — have been with us 15 to 40 years or more.

Growth of cities in population and area requires proportionate expansion of the existing fire alarm systems with equipment capable of dependable operation in conjunction therewith.

This, and the protection of the original investment in systems from which an effective service life of half a century or more should be expected necessitates a dependable source of supply for new equipment and for the replacement at reasonable cost of broken and damaged parts.

The permanence of an established source of supply with adequate facilities for manufacture and service is essential to municipal economy.

The Modern Fire Alarm Box
GAMEWELL Three-Fold
Successive Type

THE GAMEWELL COMPANY
NEWTON UPPER FALLS 64, MASSACHUSETTS
IN CANADA: NORTHERN ELECTRIC COMPANY, LTD., MONTREAL

Public Safety

Getting the Most for Your Money in Fire Hose

MANUFACTURERS of fire hose have been asked again and again to draw up specifications for fire hose that would permit the city to select the best hose obtainable for its fire department on a competitive price basis. They have not yet found the answer to this problem.

In drawing up specifications for fire hose so that all companies can bid on an equal basis, it is necessary to throw out the window all improvements developed by individual rubber companies. Open specifications cannot include any improvement that is confined to one company, as it would eliminate other companies from bidding.

The result is a set of specifications dealing solely with physical and chemical tests covering the cotton jacket and rubber lining. The manufacturers then are asked to meet the specifications, as the city must purchase from the low bidder, provided the bid meets with the requirements. This, of course, is asking reliable companies to compete wth each other in price rather than in quality of product.

A practical method might be to ask competitive bids for hose which will meet the city's minimum specifications, but with the proviso that any manufacturer wishing to offer a superior quality of hose would submit with his bid his own specifications, pointing out how these insure a higher-grade product. The city's purchasing officials would then buy the hose which, in their opinion, with due consideration of price and quality, is to the best interest of the fire department.

Obviously the best fire hose should be purchased, if possible, for the protection of the men handling it as well as for the most effective fire fighting. The question is, what factual guides and yardsticks can be given municipal officials and fire chiefs, other than salesmen's arguments, for trustworthy and factual selection of the best offer? Buying hose on a competitive price basis is not conducive of the best results from either a safety or economical standpoint. How can the best hose be recognized among the offers received by a city?

All municipal officials will doubtless concede that a hose costing one dollar a foot that only lasts on an average of seven years is more costly than one selling at one dollar and a half a foot which gives fifteen years of safe service. It is said that some hose lasts that long in many fire departments.

Hundreds of alert fire chiefs keep an accurate record of each length of hose from the time it is put in service until discarded. These records save the taxpayers thousands of dollars by enabling the department to find which hose is the most economical and also by furnishing factual evidence to the chief for his recommendations. Such records furnish one yardstick for selecting excellent fire hose. Who will suggest others?

Oklahoma's Disaster Truck

Oklahoma State's rescue unit.

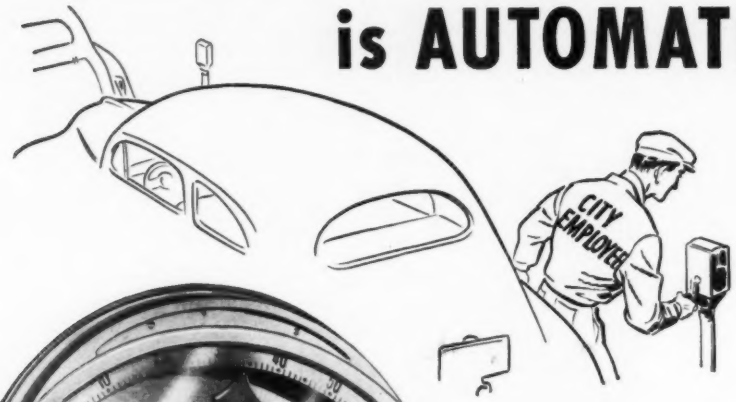
THE Oklahoma State Board of Public Welfare has equipped and placed in service this emergency mobile unit to serve areas stricken by flood, fire, tornadoes, or other disasters. Housed in a Fruehauf all-steel truck body, the unit is equipped with a gas-operated Servel Electrolux refrigerator with a capacity of 8 cubic feet to carry medical supplies, and 32 litters that can be set up as emergency cots. In addition, the mobile aid unit carries four portable 800-watt Kohler gasoline-powered electric generators to provide emergency lighting where power sources have failed. These units and all necessary wiring, extension lamps, etc., are carried in a special cabinet built within the truck body. The truck is equipped with a radio-receiving set beamed to the wave-length assigned the Oklahoma Highway Patrol.

Safer Grandstands And Tents

A NEW edition of the American Standard for grandstands and tents makes it easier to compute wind loads on grandstands, and clarifies the requirements for aisles and for ways of leaving grandstands and similar outdoor places where large numbers of people gather together.

The American Standard for Grandstands, Tents and Other Places of Outdoor Assembly, Z20.2—1949, is available from the National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass., and from the American Standards Association, 70 East 45th St., New York 17, N. Y., at 25 cents per copy.

How AUTOMATIC is AUTOMATIC?



What do they mean when they talk about automatic parking meters? Automatic for whom? Certainly not for the city because a city employee spends about 30 hours per week per thousand meters just to keep so-called automatic meters wound up. And that provides for only two windings a week. Furthermore, it does not allow any time for making repairs or adjustments.

MI-CO PARKING METERS ARE MANUALLY OPERATED. You never see a city employee going around winding up MI-COs. That's the motorist's job. It takes him only a second to turn the handle of a MI-CO, but it saves the city a good many man hours. There's something to think about!

The city loses when springs of so-called automatic meters are not sufficiently wound to operate the mechanism. Such losses could easily run into substantial figures . . . a very important item to consider when choosing a meter.

You'll find that MI-COs offer many advantages—they pay out faster and continue to earn more because: 1) There are no springs to run down—motorists don't get free parking. 2) There are fewer moving parts—no intricate mechanism. 3) MI-COs are seldom out of order. When one needs adjusting it is usually made in a few minutes at the meter location. 4) Maintenance cost is unbelievably low.

BE SURE! Before you buy any meter, insist upon at least a five year *on the street* performance record in comparable climatic conditions. We'll be glad to send you these figures for MI-CO meters, and tell you more about their features and advantages.

MI-CO METERS, 231 Court St., Covington, Ky.

Division of The Michaels Art Bronze Co., Inc.

Street Construction & Maintenance

South Africa Reports On Rubber Streets

THE use of rubber in asphalt street surfacing, such as is being tried in Akron, Ohio (see page 105 of THE AMERICAN CITY for November 1948), came under somewhat closer study in the *South African Municipal Magazine* for August 1948. This magazine reported an inspection of certain experimental roads built in Holland with 5- to 10% rubber powder blended with asphalt. The inspection recorded the following advantages: more durable road surface, improved foundation protection, lower maintenance costs, and improved anti-skid properties.

The journal records that rubber powder can be used either in the top wearing surface of an asphalt road or throughout the entire thickness. When it is used in the top wearing surface, the following combination is recommended:

Sand	86	100 units by weight
Filler	14	
Bitumen	25 to 35	13 units by weight
Rubber powder	0 to 65	

The South African magazine recommends applying this top layer immediately while the under layer is still hot. It should be applied at a rate of 4 to10 kg. per square meter (7 to 18 pounds per square yard).

If the rubber powder is used throughout the entire pavement, these specifications are recommended:

Sand	70 to 30	90 units by weight
Stone dust	11 to 70	
Filler	8	
Bitumen	10	10 to 5 units by weight
Rubber powder	0 to 5	

The magazine suggests that the mixture be used immediately and not stored overnight, since it has a tendency to stiffen.

The recommended mixing procedure is to blend the rubber power with a portion of the dried and heated mineral matter. After this, the remainder is added and all is processed in a standard asphalt mix.

In addition to the information contained in the *South African Municipal Magazine*, pamphlets describing the use of rubber in this type of construction can be obtained from the British Rubber Development Board, Market Building, Mark Lane, London E. C. 3.

From pot-holes to smooth pavement in a single pass is the aim of the Board of Wayne County Commissioners.

Wayne County, Mich., Aims At Lower Retread Costs

A NEW resurfacing process is on trial at Wayne County, Mich. The process uses an Athey Force-Feed loader, an Athey portable crusher unit, and two motor graders. Results on three and a half miles of old blacktop road indicate that these may soon be rebuilt at a fraction of the former cost.

Territorial Road, on which this work was performed, was originally built as a road-mixed oil-aggregate mat, about 3 inches thick, laid on gravel base. This road lies in a somewhat rolling section of the county, and the clay out-cropping on the hillside results in poor drainage and considerable frost damage. Over a long period of years continuous patching with various types of material, and several seal coats with 85-100 penetration asphalt as well as tars, gave us a combination that would defy remixing by ordinary means.

The traffic count on this road is 1,261 vehicles in 24 hours and consists mostly of automobiles, although we do have a few heavy trucks. Inasmuch as the maintenance on this road has been high, we hope to pave it with concrete when funds become available. This may be some years in the future, and the operation which we have undertaken this fall is in the nature of stop-gap work.

The project was started about the latter part of August, and the crusher used was the same one that was on display at the Road Show in Chicago. A large motor patrol was used to scarify the mat. After a preliminary blading to get the material somewhat uniform, it was cut into four windrows to accommodate the capacity of the crusher. The rate of crushing was about 50 tons per hour, but replacing the hammers, which wore out rapidly, and changing the power unit on the crusher consumed so much time that the job required an over-all time of about four weeks for two and a half miles.

The work of mixing the crushed material with a small amount of a light cut-back (we tried both MC-1 and SC-2) required about normal time.

The reduction by the crusher left a top size of 1½ inches. Some of these pieces, of course, were built-up seal-coat material which could not be broken up by road mixing. The material when laid out had a somewhat dry appearance and did scuff off under traffic during rolling operations with a 10-ton steel roller.

It was thought advisable to add a seal coat of 3/10 of a gallon of T-9 with 20 pounds of chips, because the cool fall weather seemed to retard compaction.

The cost of the operation under such adverse conditions was $3 per ton, not including the seal coat, but we feel that this could be cut to $2 under better conditions. The cost is composed largely of equipment rental and operators' salaries, which range from $1.50 to $1.975 per hour.

While the road looks good at the present time, we do not feel that we are in a position to draw any conclusions other than to say that we think the method has possibilities.

M. N. BROWN
General Superintendent
Board of Wayne County Commissioners

CHASSIS PARTS LAST LONGER

AND maintenance costs come down when you lubricate with long-lasting Texaco Marfak

HEAVY loads won't squeeze *Texaco Marfak* out of bearings. Rough service won't jar it out. *Texaco Marfak* seals out dirt and road splash, keeps rust-forming moisture off metal. Bearings get full protection, parts last longer, maintenance costs less.

In wheel bearings, *Texaco Marfak Heavy Duty* is the stay-on-the-job lubricant to use. It seals itself in, seals out dirt, protects against rust. It won't leak onto brakes . . . requires no seasonal re-packing. *Texaco Marfak Heavy Duty* will save you many a wheel bearing replacement . . . sharply reduce your maintenance costs.

The line-up of Texaco lubricants for contractors' equipment also includes *Texaco Ursa Oil X★★*, designed to keep Diesel and heavy-duty gasoline engines clean . . . and *Texaco Track Roll Lubricant* to give rollers extra protection against dirt and moisture.

Use Texaco's Simplified Lubrication Plan to get better, more economical performance from *all* your equipment. A Texaco Lubrication Engineer will gladly tell you about it. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

MORE THAN 300 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD!

HIT IT! *Marfak* won't splatter like ordinary chassis grease — proof that it stays in the bearings under heavy loads and pounding service.

STRETCH IT! *Marfak* holds together where ordinary grease comes apart — proof that it can't work out of bearings, gives longer-lasting protection.

RUB IT! See how *Marfak* liquefies under friction while retaining its tough outer "collar" — proof that it seals itself in, seals out dirt and moisture.

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Tune in . . . TEXACO STAR THEATRE every Wednesday night starring Milton Berle. See newspaper for time and station.

Check Your Wants and Mail Coupon

Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write directly to the manufacturers, or circle the identifying numbers on this coupon and mail to THE AMERICAN CITY MAGAZINE, 470 Fourth Ave., New York 16. We will see that catalogs are sent to you without expense or obligation.

5/49

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806	807	808	809	810	811	812	813	814	815	816									

Name ..... **Position** .....

Address .....

Curb Stops

711 One of the line of curb stops manufactured by the A. Y. McDonald Mfg. Co., Dubuque, Iowa, and described in literature available from them, is the Diamond Patent Cap inverted key curb stop, Plate E-4717 Minneapolis Pattern. This is a round-way stop and is designed for copper service pipe at both ends. The inverted key avoids excessive wear and it is loosened as pressure is applied downward in a turning motion. Sizes are ½, ¾, 1, 1¼, 1½, and 2 inches.

Operate Sluice Gates With Portable Power Drive

712 When power is required to open or close manually operated sluice gates or street valves and similar jobs, the Toledo power drive saves time. The ½-hp motor is reversible and the motor automatically adjusts speed to the load. The driving bushing rotates about 30 rpm under load. It is available with either steel or rubber-tired wheels. Write for literature to the Toledo Pipe Threading Machine Co., Toledo, Ohio.

Clean Sewers From Above Ground

713 The Turco Maxi-Power Unit No. 2, a powered sewer-cleaning machine, comes in a water-cooled and an air-cooled model. It is designed with a tubular frame, forged, inclosed gearing, one clutch, flange ball-bearings, designed level wind, three-speed transmission, high-speed chain drive, no-clutch free spooling, selected speeds, and a bucket swing positioner. Write for a descriptive catalog to the Turbine Sewer Machine Co., 5210 W. State St., Milwaukee, Wis.

Cut Patching Costs

714 On the Wayer impactor, a heated plate impacts, finishes, and cures hot or cold materials and remedies them for traffic: no roller, no water, no waiting. The machine completes 60 to 80 square feet per minute, and works flush to curbs, rails, and manholes. Ask for Bulletin 25-8, Wayer Impactor, Inc., 12 N. Third St., Columbus 15, Ohio.

This Bulldozer Speeds Work in Six Ways

715 The hydraulic bulldozer manufactured by the Baker Mfg. Co., Springfield, Ill., has direct lift, direct down pressure; engine mounting; 5-position adjustable blade tilt; interchangeable bulldozer or grade builder blades; blade pitch adjustment; smooth hydraulic control.

Aerial Mapping Is Economical

716 Before going into any large-scale expansion or planning projects it may prove expedient for your municipality to investigate the various mapping services performed by the Aero Service Corp., 236 E. Courtland St., Philadelphia 20, Pa. By means of aerial mapping, the process is performed much more quickly and economically than if done by land methods.

Establish a Uniform House Numbering System

717 Many municipal officials have concluded that much time and money is wasted annually by the public and by the post office departments, and that real dangers can result from a police or fire department that requires additional time to find a particular location—as the result of an unsystematic and complicated system of house numbering. Write for information about Cambrite tile house numbers to the Cambridge Tile Mfg. Co., Cincinnati 15, Ohio.

Compressor and Tractor in One

718 The Le Roi 105 Tractair has a self-propelled portable compressor to provide on-the-spot power for air-powered tools, and it may be used with a reversible-trip snow blade attachment, backfill blade, broom, and Swing-loader. Write for Bulletin T-3 to the Le Roi Co., Milwaukee 14, Wis.

The Advantages of Soft Water

719 Catalog #2386, *Permutit Zeolite Water Softeners and Ion Exchangers*, available from The Permutit Co., Dept. A-5, 330 West 42nd St., New York 18, N. Y., describes the troubles caused by hard water, outlines the properties of ion exchangers, and explains and illustrates up-to-date ion exchange equipment. Included is a description of the new manually or automatically controlled multiport valve.

One Man Repairs Broken Main In 5 to 15 Minutes

720 The Skinner-Seal split-coupling clamp makes a lasting repair, and it takes one man only 5 to 15 minutes to repair a broken main with this mechanism. The gasket is completely sealed and protected—at the break by a brass band; at the top, where compression rings intermesh, by a Monel metal seal band, and at the sides by hard vulcanized gasket tips. Each clamp tests to 800 pounds' line pressure. Write the M. B. Skinner Co., South Bend 21, Ind.

Portable Power Valve Operator

721 The portable Limitorque, described in a 96-page catalog available from the Philadelphia Gear Works, Inc., Erie Ave. and G St., Philadelphia 34, Pa., is a motorized valve operator that may be used wherever a hand-drawn truck can be wheeled to a valve or sluice gate location. Connected to a power outlet, it gives automatic electric opening and closing, with automatic resetting and, by means of a Universal Joint connection, provides for compensation of misalignment between floor-stand and power unit.

Pick-Up Sweeper Gives 6-Foot-Swath of Cleanliness

722 The Gutter-Snipe Model E pick-up street sweeper sweeps 6 feet wide, holds 1¼ yards of dirt, turns in a 19-foot circle, sweeps up a 10% grade, and has three sweeping speeds. Write the Municipal Supply Co., South Bend 23, Ind.

Sprayers for Weed, Pest Control, And Stand-by Fire Protection

723 Myers sprayers, in 2-wheel, 4-wheel, and skid-type models, come in capacities up to 50 gpm and pressures up to 800 pounds. The sprayers are designed for tree and shrubbery spraying, weed and pest control, whitewashing and disinfecting, street and gutter flushing, and as stand-by fire protection. Write for a folder to the F. E. Myers & Bro. Co., Dept. N-193, Ashland, Ohio.

Break Asphalt and Concrete At Low Cost

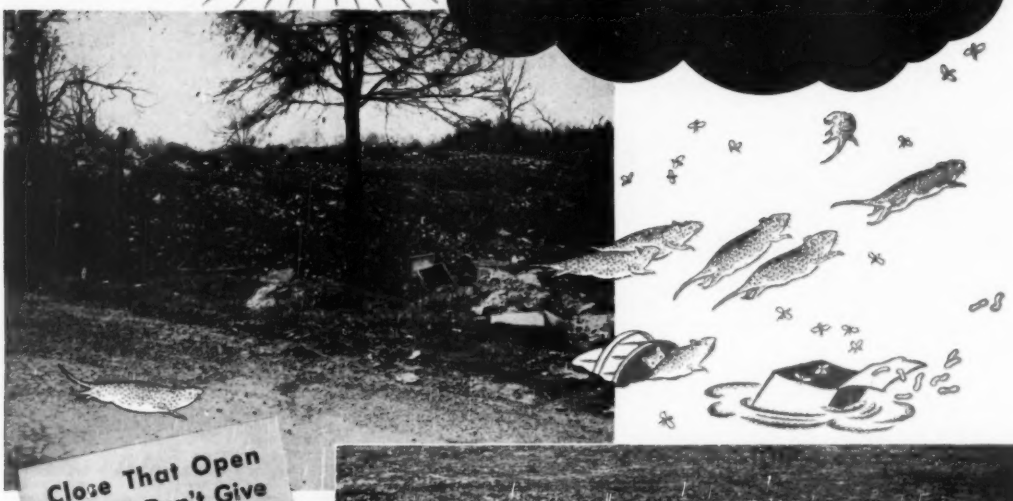
724 The Mighty Midget breaks asphalt and concrete, tamps backfill, and gives high density. With all controls within the operator's reach, it operates on 105-cfm compressors. Write to Department D of the R. P. B. Corp., 2751 E. 11th St., Los Angeles, Calif.

Paint Striper

725 Any zone or striping paint of standard manufacture may be used in the new Controlled-Flo traffic-line paint striper, with long-lasting, all-metal paint spreader. It has a 9-gallon tank and may be obtained in widths from 2 to 8 inches, interchangeable, but not adjustable. Write for literature on this model, or the 5-gallon-tank model to the Universal Marine & Mfg. Corp., 137 Alexander St., Yonkers 2, N. Y.

(Continued on Page 23)

WITH SPRING COME THE PESTS



Close That Open Dump! Don't Give Them a Chance to Breed and Multiply.

Get Started NOW on That Sanitary Fill You Have Been Planning . . . Built Efficiently, Economically with the Drott Bullclam Shovel.

Operated by DROTT POSITIVE CLOSED HYDRAULIC SYSTEM • SMOOTH • QUICK • DEPENDABLE. Keeps dirt and air out . . . keeps oil in! Used successfully on Drott equipment for many years.

FREE

On request; descriptive catalog and list of cities using Drott method. Also cost data on collection and sanitary fill equipment.

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EQUIPMENT

DROTT MANUFACTURING CORP.
3641 W. WISCONSIN AVE. MILWAUKEE 8, WISCONSIN

Your Catalog Supply Service

Please Use Coupon on Page 21

Machines for Compacting Soil And for Vibrating Concrete

726 For information on high-frequency compacting of concrete or of soil, write Vibro-Plus Corp., 243 West 55th St., New York 19, N. Y. In addition to a line of new compactors, this company sells vibrating screens, troughs, spades, and tampers.

4-Cycle Diesels Cut Costs

727 One municipality added an Enterprise DSG-38 diesel to its power plant and increased power capacity 25% over the power obtained from its 1,255 hp in two hydroelectric units and 1,070 hp in four diesel units. The cost of operation was reduced since a 32 API gravity fuel could be used instead of the 28 gravity fuel formerly required. Write for full details of these 4-cycle diesel engines and generator sets to Enterprise Engine & Foundry Co., 18th & Florida Sts., San Francisco 10, Calif.

Vertical Turbine Pumps From 40 to 16,000 GPM

728 Layne's complete service in the well-water-system field includes surveys, water-strata explorations, well-drilling, pump installations, and vertical turbine pumps that are available in sizes from 40 to 16,000 gpm. When feasible, these pumps can be installed in wells already drilled. Write for the complete story to Layne & Bowler, Inc., General Offices, Memphis 8, Tenn.

16 Inch Cutting Width On Chain Saw

729 The Model DJ Hornet chain saw is available in open-end cutting lengths of 16, 20, 24, and 30 inches. For two-man operation, the saw comes in 24, 30, and 36 inches. Write for literature about the Hornet to the Tubesing Equipment Co., Station H, Box 85, Buffalo 14, N. Y., or the Southern Distributing Co., Front & Central Ave., Cincinnati 2, Ohio.

How and Where to Use Paints

730 *Painting Guides* describes the type of paint that is most effective for various parts of municipal departments. For example, in a water-filtration plant, filter basins, walkways over filter basins, floors, and the interior of water tanks can be painted, not only for the aesthetics involved but also to protect the structures. Write to Inertol Co., Inc., 480 Frelinghuysen Ave., Newark 5, N. J.

1949 Truck, Trailer Laws

731 The 1949 *Truck and Trailer Size and Weight Restrictions* booklet prepared by the Four Wheel Drive Auto Co., Clintonville, Wis., is important to every official connected with the purchase of truck and trailer equipment. The booklet contains the regulations existent in the 48 states and the District of Columbia.

Chain Saws with 5-Hp Motors

732 The McCulloch Motors Corp., 6101 W. Century Blvd., Los Angeles 45, Calif., Dept. MM, makes 1- and 2-man chain saws that carry back of them the power of 5-hp motors. The saws are available in 20-, 36-, 48-, and 60-inch-blade lengths. And 360° swivel permits close felling and underbucking.

Portable and Self-Contained, Breaker Cuts Many Surfaces

733 The Warsop portable and self-contained breaker, described in literature available from Warsop Power Tools, Inc., 347 N. 12th St., Philadelphia 7, Pa., can be used for breaking concrete, general demolition work, trench spading, asphalt cutting, light ramming, driving ground rods, and digging frozen and hard ground. It uses about 2 quarts of fuel—a gasoline-oil mixture in the proportion of 16 to 1—per hour of operation.

A New Chlorinator

734 The Builders Chlorinizer Model CVS meters chlorine gas and produces chlorine water solutions. It is adaptable to semi-automatic, program, or automatic proportional operation by the addition of attachments to the basic manual unit. Chlorine rate of flow recorders may be furnished as original equipment or attached later. Ask for Bulletin 840-F1, Builders-Providence, Inc., Providence 1, R. I.

Chemical Feeder

735 The Chem-O-Feeder, a heavy-duty mechanism for feeding chemicals, is a diaphragm pump usually equipped with a "See-Thru" plastic reagent head and driven by a 1/6-hp, 1,725-rpm electric motor. The feed rate is manually adjustable while the unit is in motion. Write for Bulletin San-7 to Proportioneers, Inc., 9-93 Codding St., Providence, R. I.

Pipe Puller and Pusher Cuts Costs

736 The Trojan pipe puller and pusher, manufactured by the Trojan Mfg. Co., 441 E. Water St., Troy, Ohio comes in two models. The A is for ½- and 1-inch pipe and provides 15 tons of pushing pressure; all operations are performed by one man. The B pushes up to 2-inch pipe without additional dogs, clamps or wedges. It has three pushing speeds for different types of soil. Operation is continuous.

Uniform Fabrics

737 For a brochure about the fabrics made by Metcalf Bros. & Co., 45 E. 17th St., New York, N. Y., write the company. Metcalf's products are sturdy enough to withstand hard wear, and have enough body so that the uniform always looks neatly tailored.

10-Yard Garbage Unit Holds 20 Yards of Loose Garbage

738 The Pak-Mor garbage-collection unit has a packer-plate that compresses about 20 yards of loose, unpacked garbage into a 10-yard mass. Other features of the unit are large loading doors that comprise the front third of the body, and the end-gate doors are circumferentially as large as the body. Write for details to the Pak-Mor Mfg. Co., Div. of Alamo Welding and Boiler Works, 812 North Flores, San Antonio, Texas.

Truck-Mounted Compressor Drives from the Truck Engine

739 The Davey Auto-Air portable compressor is truck mounted and driven directly from the truck engine through the Davey power take-off—and job-to-job travel rate is limited only by the speed of the truck on which the Auto-Air is mounted. These models, available in capacities of 60, 105, 160, 210, and 315 cfm, are described in Form E-230, available from the Davey Compressor Co., Kent, Ohio.

Locate Water and Steam Leaks Quickly, Inexpensively

740 The Geophone, operating on the principles of the seismograph and stethoscope, picks up the vibrations of water and steam leaks from as far as 50 to 75 feet away from the actual leak. The savings resulting from exact location for repair work can be appreciable. Write the Globe Phone Mfg. Corp., Dept. Y, Reading, Mass.

All-Welded Hand Cart For Leaf Collecting and Burning

741 County Specialties, P. O. Box 626, Port Chester, N. Y., makes an all-welded utility cart that has a capacity of 18 cubic feet. Equipped with two wheels, it is used to collect leaves and rubbish and then to burn the refuse collected—no wrapping, loading, carting, dumping: just one operation. Write for literature about this cart that has many times the capacity of a wheelbarrow.

Slow or Fast Dumping With Loader

742 The Ottawa double-action industrial loader has a bucket hydraulically controlled by a pair of double-action cylinders that permits excavations as well as lifting, loading, digging, and building of stock piles, material leveling and spreading; and slow or fast dumping with a loaded bucket that is leveled throughout the lifting operation. Write Ottawa Steel Products, Inc., Industrial Div., Ottawa, Kans.

Bronze Wall-Type Drinking Fountains

743 A memorial that is not only a constant reminder but is also inherently useful is a wall-type drinking fountain, suitably inscribed. For information about this and various types of bronze plaques, write Newman Brothers, Inc., 659 W. Fourth St., Cincinnati 3, Ohio.

Joint and Crack Sealing Compounds

744 Zero-Lastic sealing compounds are available in the following types: oil-resisting compound, oil-resisting joint material for airports, vertical and sloping joint fillers, and Hair-Line crack filler. Write to Rubberized Oil Plastics, 6049 West 65th St., Chicago 38, Ill.

Pack Two Refuse Loads Into One

745 The Hydropaka refuse collection body is loaded through large sliding-door openings on each side of the body. Then a platen, or packing plate, equal to the internal cross dimensions of the body, travels the length of the body carrying material from the door openings in the front to the rear where it compresses and packs the refuse. In the final step, the door at the rear of the body is unlatched and the platen is moved to the extreme rear, automatically pushing out the compressed material. Write for literature to The Marion Metal Products Co., Marion, Ohio.

Additional Stadium Seating Stores in Small Place

746 Hussey steel portable bleachers in 6-, 10-, and 15-tier stands, are safe and easy to erect or take down for storage. Additional sections can be added as needed. Write for literature about the bleachers and portable and permanent grandstands, diving boards, swimming floats, to the Hussey Mfg. Co., Inc., 487 Railroad St., North Berwick, Maine.

Catch-Basin Cleaning Machines

747 The Krane Kar, made by the Silent Hoist & Crane Co., 846 63rd St., Brooklyn 20, N. Y., is a mobile, gasoline-engine-driven, swing-boom crane equipped with a deep-lip orange-peel bucket for cleaning and servicing sewer catch basins in a way that eliminates hand-shovel labor and keeps the personnel out of unsanitary muck. One man lowers the bucket into the manhole, raises the filled bucket, swings the boom and dumps the collected matter into the truck. Ask for bulletin No. 67.

(Continued on Page 25)

KEY FEATURES OF A COMPLETE STEEL SERVICE

Many types still short, but over-all stocks in 13 Ryerson plants are probably the nation's largest.

Prompt personal steel service on all orders, large or small, is a Ryerson tradition.

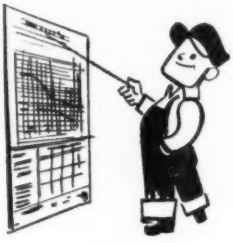
Accurate cutting to your order is assured by modern Ryerson equipment.

Over a Century of steel experience means more know-how applied to your steel problems.

You get quick delivery anywhere, because the network of Ryerson plants stretches from coast to coast.

PRINCIPAL PRODUCTS

BARS—carbon & alloy, hot rolled & cold finished
STRUCTURALS—channels, angles, I & H beams, etc.
PLATES—sheared & U. M., inland 4-Way Floor Plate, etc.
SHEETS—hot & cold rolled, many types & coatings
TUBING—seamless & welded, mechanical & boiler tubes
STAINLESS—Allegheny metal sheets, plates, bars, tubes, pipe, etc.
REINFORCING—bars & accessories, wire mesh, etc.
BABBITT—and phenolic laminated bearing material
MACHINERY & TOOLS—metal working & boiler shop



Added Ryerson service includes a chart to guide heat treating sent with alloy shipments.

RYERSON · STEEL

Joseph T. Ryerson & Son, Inc. Plants: New York • Boston • Philadelphia • Detroit • Cincinnati Cleveland • Pittsburgh • Buffalo • Chicago • Milwaukee • St. Louis • Los Angeles • San Francisco

Stop—Check and Mail

Please Use Coupon on Page 21

How Efficient Is Your Water Works?

748 The Pitometer Co., Water Distribution Engineers, 50 Church St., New York 7, N. Y., will conduct a completely objective check-up of your water-distribution system to determine its present efficiency and ability to handle future demands. The result of such a survey will help to conserve the available supply, decrease operating costs, and increase revenue.

Make Water Safe With Chlorine

749 The Solvay Sales Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y., will give you quick delivery of liquid chlorine—an indispensable chemical in the safe conditioning of water.

Add Life to Batteries

750 AD-X2 is manufactured to lengthen the life expectancy of mechanically sound, sulphated batteries—keeping batteries in peak condition. Write Pioneers, Inc., 2411 Grove St., Oakland 12, Calif.

No Stoop, No Squat With Valve-Box Locator

751 The Aqua valve-box locator has instant top-view reading—the operator walks upright during the entire operation and can work faster and more efficiently as the result of the machine's design, which minimizes fatigue. The instrument is operatable in snow and ice, and through any type of paving. Write the Aqua Survey & Instrument Co., 2513 Leslie Ave., Norwood, Cincinnati 12, Ohio.

Pumps in Capacities To 4,000 Gpm

752 Aurora horizontally split-case, double-suction, single-stage, centrifugal pumps—type OD—come in capacities to 4,000 gpm with heads to 300 feet. They may be used for general water supply as well as for handling condenser circulating water and chemical solutions and for irrigation work. Write for condensed Catalog M to the Aurora Pump Co., 66 Loucks St., Aurora, Ill.

Pests—Insect Variety—Can Be Controlled

753 The Rotomist which mounts on a light truck, is one-man-operated and applies concentrates and dry or wet dust in micron-sized spray particles with a minimum of drift. The John Bean line includes models with outputs to 60 gpm at pressures to 800 pounds. There are portable sprayers for hard-to-reach areas. Write for information to the John Bean Div., Food Machinery and Chemical Corp., Lansing 4, Mich.

Motor Scooter Economies

754 With the Cushman motor scooter, three economies are effected: low initial investment, low maintenance and repair, and low operating cost (less than 1/3 cent per mile). The scooter can be used to advantage by officials of the park, street, police, traffic, and health departments. Write Cushman Motor Works, Inc., Dept. AC-39, Lincoln, Nebr.

Good Turf Depends on Good Seed

755 The selection of grass seed is the first consideration in obtaining smooth, homogeneous lawns. For information about Dickinson lawn grass seed, blended according to tested formulae, write the Albert Dickinson Co., 2764 West 35th St., Chicago 32, Ill.

End Costly Delays In Pipeline Construction

756 The Ka-Mo earth-boring equipment tunnels under highways, streets, railways, parkways, sidewalks, and lawns. The drills are available in sizes from 3 to 26 inches in diameter. In loose or soft earth, holes are drilled through a caisson which is pulled along as drilling progresses—preventing earth from caving into the hole and leaving the dirt above the caisson as firm as before operations began. Write Ka-Mo Tools, Inc., 2121 S. Troy St., Chicago 23, Ill.

Diesel Generator Sets

757 If you are in the market for a diesel generator set, immediate delivery, in unit capacities from 10 to 1,420 kva, a.c., 50 and 60 cycles, any voltage, write for descriptive bulletins to the A. G. Schoonmaker Co., Inc., Power Div., 50 Church St., New York 7, N. Y.

Maintain a Safety Record With Warning Signals

758 Safety accessories for lift bridges are described in Bulletin No. 144 NN-1-AC-5. Among the styles illustrated are a neon signal-light unit with a bell, spring-mounted vertical lift or bascule bridge lamps, a bascule bridge lamp with a 180° lens, and lamps with 90°, 180°, and 360° lenses available, in various colors. Write the Western Railroad Supply Co., 2406-2436 South Ashland Ave., Chicago 8, Ill.

Fence Protects Against Arson, Theft, Trespassing

759 Tamper-proof, low in cost, and virtually maintenance free, Realock chain-link fence provides maximum protection against trespasser-caused damage. Write for data to the Wickwire Spencer Steel Div., 361 Delaware Ave., Buffalo 2, N. Y.

Materials for Uniforms Look Good, Last Long

760 Reeves Army Twill cuts and tailors well; washes and irons, is durable, and sanforized. Uniforms made from this fabric will not only last, but look good in the process. Write for details to Reeves Brothers, Inc., 54 Worth St., New York 13, N. Y.

No Plumbing or Special Wiring With This Photocopyer

761 The new record Dexigraph photocopies administrative records in sizes up to 9¾ by 14 inches at the same size, or at any of five reductions down to 50% of the original size. Larger records up to 14 by 17 inches can be copied at various smaller sizes. No previous experience is required to operate the machine, and since no plumbing or special wiring is required, the Dexigraph can be rolled on its casters from one department to another—wherever the records are located. Write for a booklet to Photo Records Div., Room 232, Remington Rand, Inc., 315 Fourth Ave., New York 10, N.Y.

Light Up with Floodlights

762 Revere Electric Mfg. Co., 6015 Broadway, Chicago 40, Ill., will send you a catalog describing its 20-inch, 19- and 50-degree floodlights for playgrounds, sports fields, and stadiums. Design features permit wiring and maintenance to be accomplished with ease.

Paving Repairs

763 Nostrip makes bituminous patches that hold and last even under the most adverse weather conditions. Patch work may be carried on during rain, and it is not necessary to dry out chuckholes or to use dry aggregates for stockpile or patching mix. Write the Nostrip Div. of Maguire Industries, Inc., 122 E. 42nd St., New York 17, N. Y.

Chlorine Safety Charts

764 A new wall chart, *Recommendations for Safety in Use and Handling of Liquid Chlorine Cylinders and Ton Containers*, has been prepared by the Hooker Electro-Chemical Co., Niagara Falls, N. Y., listing recommendations for storage, handling, and use of liquid chlorine cylinders, as well as emergency, first aid, and prophylactic measures.

Meet Statistics Problems Efficiently with Machines

765 Modern business machines guarantee accuracy and speed and assure the immediate tabulation of information. For data about adding, calculating, and bookkeeping machines; microfilm apparatus (the most modern development in fast and space-saving record keeping), chairs, and typewriter and business-machine supplies, write the Burroughs Adding Machine Co., Detroit 32, Mich.

Convenient Form For Jointing Compound

766 Literature from the Hydraulic Development Corp., 50 Church St., New York 7, N. Y., describes the new 2-pound pigs—12 to a sheet—that facilitates the use of the jointing compound. Still available in 100-pound waterproof bags for those who prefer the powdered form, this product is protected with a germicide against hazardous soil conditions.

Underwater Lights For Pools

767 The Crouse-Hinds Type RPS underwater floodlight requires only the removal of four cover screws and the pulling of a plug to permit the withdrawal of the lamp assembly for servicing; no manholes, no passageways, no wet niches. Write to Crouse-Hinds Co., Syracuse 1, N. Y.

Garbage Cans Breed Rodents—Kitchen Grinders Don't

768 The dangers of disease and filth resulting from garbage-can disposal of kitchen wastes can be eliminated with the use of kitchen grinders. And besides safeguarding public health, these mechanisms on a wholesale basis appreciably decrease refuse-collection costs. Write for information about the American Kitchen Disposer to the American Central Div., AVCO Mfg. Co., Connersville, Ind.

48-Inch Gate Valve Inserted Under Pressure

769 A. P. Smith tapping machines made it possible to insert a gate valve on a 48-inch cast-iron main under pressure in four days without interruption of service or reduction in pressure in one city. Write for information about valves; tapping sleeves; hydrants; water service brass goods; tapping, inserting, pipe cutting, and corporation tapping machines; indicator posts, and floor stands; the A. P. Smith Mfg. Co., East Orange, N. J.

(Continued on Page 27)

For Economy

IN *small towns*

AND *large cities*

use

GarWood LOAD-PACKERS

What users say!

- "The Load-Packers reduced our collection costs 39%."
- "The public prefers the use of Load-Packers for their cleanliness."
- "We are more than satisfied with the excellent work this piece of equipment has done."

(Names of users on request.)

If you have problems in refuse collection from a cost standpoint . . . from a health point of view . . . from the manpower angle . . . call on Gar Wood. We are specialists in solving these problems for cities and towns of all sizes. Ask for Bulletin M-51 explaining how you can cut refuse collection costs and improve public health in your community.

Write for BULLETIN M-51

3806

GAR WOOD GW INDUSTRIES

GAR WOOD INDUSTRIES, INC. WAYNE DIVISION, WAYNE, MICH.

PRODUCTS—HOISTS • DUMP BODIES • WINCHES • CRANES • TANKS • TRACTOR EQUIPMENT
DITCHERS • SHOVELS • FINEGRADERS • SPREADERS • TRUCK PATROLS

Which Do You Want?

Please Use Coupon on Page 21

Clean Up Leaves With Vacuum Loader

770 The Leaf Loader Div., American Structural Steel and Tank Co., 21050 W. 8 Mile Rd., Detroit 19, Mich., will send you data on its vacuum leaf loader, which collects leaves and debris by a suction action. Fast, clean, low-cost, and mechanized, the machine is described in a leaflet distributed by the company.

Keep Battery Costs Down With Generating Systems

771 Leece-Neville's A-C generating systems keep batteries fully charged, prolonging battery life, eliminating battery maintenance, and consequently keeping costs at a minimum. Write for data to the Leece-Neville Co., Cleveland 14, Ohio.

Four Designs Of Reinforced Concrete Pipe

772 Lock Joint's products include prestressed concrete cylinder pipe, and reinforced-concrete subaqueous, pressure, and cylinder pipe. All of these types may be equipped with Lock Joint's flexible, self-centering rubber and steel joint, which simplifies installation and reduces the initial cost of laying the line. Write for data to the Lock Joint Pipe Co., P. O. Box 269, East Orange, N. J.

Modern Fire Apparatus Protects Your Community

773 The Mack Mfg. Corp., Fire Apparatus Div., Long Island City 1, N. Y., makes triple combination pumpers of 500 to 2,000 gallons, squad wagons, city service and quadruple-combination ladder trucks.

Trailer Has Capacity Of 5 to 7 Tons

774 The extremely low platform height of the Martin Model 22 trailer facilitates the loading of rollers, track tractors, and bulk material. The features of rugged construction, ample flotation, and safety construction are described in specifications available from the Martin Machine Co., Kewanee, Ill.

Playground Equipment

775 Burke-Built equipment for playgrounds is sturdy, strong, and planned for all playground-age children. The line includes climb-a-rounds, swings, slides, see-saws, merry-go-rounds, turning bars, horizontal ladders. All surfaces are smooth and the apparati need not be set in concrete. Write for catalog B to the J. E. Burke Co., Fond du Lac, Wis.

Reduce Park Bench Costs

776 California benches are constructed of reinforced concrete ends with well-seasoned wood-strip seats and back rests, and the cost of upkeep is negligible. Write for bulletin A-1 to the Art Concrete Works, Pasadena, Calif.

Cut Refuse Disposal Costs By Using the Sanitary Fill

777 The sanitary fill method of refuse disposal is no better than the earth-moving equipment used to put it in practice. The Caterpillar Tractor Co. has data obtained from one typical large city that uses a Caterpillar diesel tractor with a bulldozer and scraper to dig a trench 20 feet deep and 30 feet wide. With the refuse covered by a thick layer of dirt in this large trench, the fill takes on true sanitary characteristics. Write for information to the Caterpillar Tractor Co., Peoria, Ill.

Water-Pressure Valves —In 1,500 Types, Sizes

778 Among the 1,500 styles and sizes of standard valves manufactured by the Golden-Anderson Valve Specialty Co., Keenan Bldg., Pittsburgh 22, Pa., are water-pressure reducing, reducing and relief, reducing and check, reducing and double-acting water-level control, and relief valves; single-acting semi-throttling altitude valves, and double-acting differential altitude valves.

Photoelectric Street-Light Controls

779 F-P controls provide light when natural light falls below a pre-selected safety level, regardless of time or weather—combatting the danger of the twilight period when most accidents occur. These controls require no re-setting in the event of power failure; tube life is about two years. Write the Fisher-Pierce Co., Inc., 94 Ceylon St., Boston 21, Mass.

Water Meters

780 The Worthington-Gamon Meter Co., 296 South St., Newark 5, N. J., will send you data on its complete line of water meters, available in all sizes and types.

Modern Traffic Signals

781 The Marbelite Co., Inc., 26 Warren St., New York 7, N. Y., will send you details about its signals and controllers for effectively controlling the flow of traffic and cutting down on accidents.

Case Histories On Steel Water Lines

782 The Dresser Mfg. Div., Bradford, Pa., will send you a brochure describing important pipeline projects built recently using coated and lined steel water pipe joined with Dresser couplings. Utilization of these couplings dates as far back as 50 years. The brochure outlines representative installations, describes the size and other significant details of the project.

Meter Measures Fluid Flow

783 Bulletin No. 301-A describes the fluid meter manufactured by the Bailey Meter Co., 1035 Ivanhoe Rd., Cleveland 10, Ohio. The flow of steam, liquids, and gases in pipelines at high or low pressures is indicated, recorded, and integrated on a Bailey Register.

Controlled Air Input For Good Concrete

784 In air-entrained concrete it is important that the air be absolutely controlled in quantity to achieve a concrete that is resistant to the disintegrating effect of freezing and thawing, and de-icing salts. Darex AEA is an air-entraining agent—harmless, neutral, water-soluble, equal in viscosity to water—that contains a catalyst which makes available more of the inherent strength of portland cement without entering into chemical combination with any of the hydration products. Write the Dewey and Almy Chemical Co., Cambridge, Mass.

Measure Flows with Accuracy

785 Simplex venturi tubes insure stable coefficients over wide velocity ranges, enabling the accompanying meter to measure flow with extreme accuracy. Simplex Type MO meters in conjunction with the Simplex venturi tubes as primary devices guarantee accuracy in flow measurement over long ranges and can be furnished to measure over ranges of 20 to 1, 25 to 1, 28.5 to 1, or 32.5 to 1. Write for bulletins to the Simplex Valve & Meter Co., 6789 Upland St., Philadelphia 42, Pa.

Sweep Clean

786 The Harper Brush Works, Fairfield, Iowa, produces brushes designed for such diversified sweeping jobs as street cleaning, cleaning cement floors, brick, wood surfaces, highly polished floors, tennis courts. Also made by this company are wet mops, wash mitts, squeegees, window brushes, and dusters. Write for an illustrated catalog.

Reduce Water Waste With Meters

787 One city found that after metering its water supply, the 24-hour flow was reduced over 55%. The Badger Meter Mfg. Co., Milwaukee 10, Wis., makes models in sizes up to 12 inches, and in different styles for different conditions of climate. Write for Chart No. 695.

Hydraulic Power Steering For Graders, Tractors

788 Garrison hydraulic power steering for graders, wheel-type tractors, and dump trucks reduces steering effort to easy one-hand operation and eliminates wheel fight and road shock. The mechanism, which is in effect mechanical steering with hydraulic assistance, is easily installed and is available in kits. Write the Garrison Mfg. Co., 1506 Santa Fe Ave., Los Angeles 21, Calif.

Precalked Joints For Fast Pipe Laying

789 McWane precalked joints come ready to use. Pure lead and redwood wedges are put in the bells at the plant and neither expensive equipment nor skilled labor is required—just a hammer and a calking tool. Write the McWane Cast Iron Pipe Co., Birmingham, Ala., for data about sizes from 2 to 12 inches.

Solve Power Problems

790 A Superior Supercharged diesel can solve your power problems by providing greater power output from the same engine through an over-all increase in mechanical efficiency that means lower fuel costs per kw at maximum and partial loads. Operation is automatic; no control devices are necessary. Write the National Supply Co., Superior Engine Div., Springfield, Ohio.

Catch-Basin Cleaner Has Pneumatic Controls

791 The Netco catch-basin cleaner operates through an opening as small as 16 inches, and the bucket removes sticks, stones, bottles, wire, and other debris. Averaging 20 to 30 catch basins per 8-hour day, the cleaner, which has a hoisting capacity up to 1,500 pounds, operates continuously, since the material removed from the catch basins is loaded into other trucks. Write the Netco Div., Clark-Wilcox Co., 118 Western Ave., Boston 34, Mass.

New Equipment For Sewer Cleaning

792 The Flexible lower manhole jacks, for sewer and line cleaning operations, speed tool changing and hold the face of the bell away from the lip of the sewer line itself, enabling operators to see roots before they can ram tight in the rod guide. Write for data to the Flexible Sewer-Rod Equipment Co., 9059 Venice Blvd., Los Angeles 34, Calif.

Prompt Fire Alarm

793 Fire-alarm boxes, utilized to give quickly to the fire-station news of a fire, can prevent small fires from becoming big ones—with savings in lives and property. Write for information to The Gamewell Co., Newton Upper Falls 64, Mass.

(Continued on Page 28)

COLE

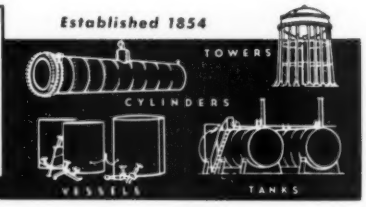
TANK DESIGNING BACKED BY 95 YEARS EXPERIENCE

*** Cole has specialized in the design, fabrication, and erection of elevated tanks for four generations. This long experience enables us to handle your assignment with dispatch, and to your complete satisfaction . . . We design, fabricate, and erect, in capacities from 5,000 to 2,000,000 gallons, with hemispherical, ellipsoidal, or conical bottoms.**

Write for prices, stating capacity, height to bottom, and location.

R. D. COLE
MANUFACTURING CO.
NEWNAN, GA.

Established 1854



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Sedimentation, Sludge Removal

794 *Quiescent Clarification* is the title of Bulletin W-800, S-6000 from Infilco, Inc., 325 West 25th Place, Chicago 16, Ill., describing the sedimentation and sludge removal accomplished by the company's WS and PD clarifiers. These mechanisms provide rapid settling at low maintenance cost.

Your Municipality Needs This Equipment

795 The Homelite Corp., 105 Riverdale Ave., Port Chester, N. Y., will send you descriptive bulletins on its lines of Carryable gasoline-engine-driven pumps, generators for operating floodlights, electric tools, chain saws, and 84-pound electric paving breakers.

Bituminous Mixers Set Up Anywhere

796 The Kwik-Mix mixers, 10 and 14 cubic yards in capacity, have a power-operated skip, and completely automatic discharge at top. The track folds back and the legs telescope for ample travel clearance. The mixer can be mounted on a raised platform for overhead batching, and a tower attachment may be added for loading trucks. Write the Kwik-Mix Co., Port Washington, Wis.

Make Your Own Street Signs With One Kit

797 Mak-A-Sign letter-changing stencils are easy to use, fast, inexpensive to operate, and make legible street names on curbs, sidewalks, and wood or concrete posts or signboards. Write for literature to the Mak-A-Sign Co., P. O. Box 2290, Birmingham, Ala.

These Pumps Will Work Against High Heads

798 BJ lines of SD and SDO Multiplex pumps —centrifugal, multi-stage, split case, volute type, designed for medium- and high-pressure service—are described in a 16-page booklet, No. 48-4000, from the Byron Jackson Co., Los Angeles 54, Calif. Both types of pumps are made as 2-, 4-, 6-, and 8-stage units with heads to 2,000 feet and capacities from 100 to 4,000 gpm.

Sidewalk Surfacing And Waterproofing

799 United Laboratories, Inc., 16814 Euclid Ave., Cleveland 12, Ohio, has prepared a brochure dealing entirely with the problems of sidewalk surfacing and waterproofing with the use of Plastic Rock, a substance that does not require removal or chipping of the old surface.

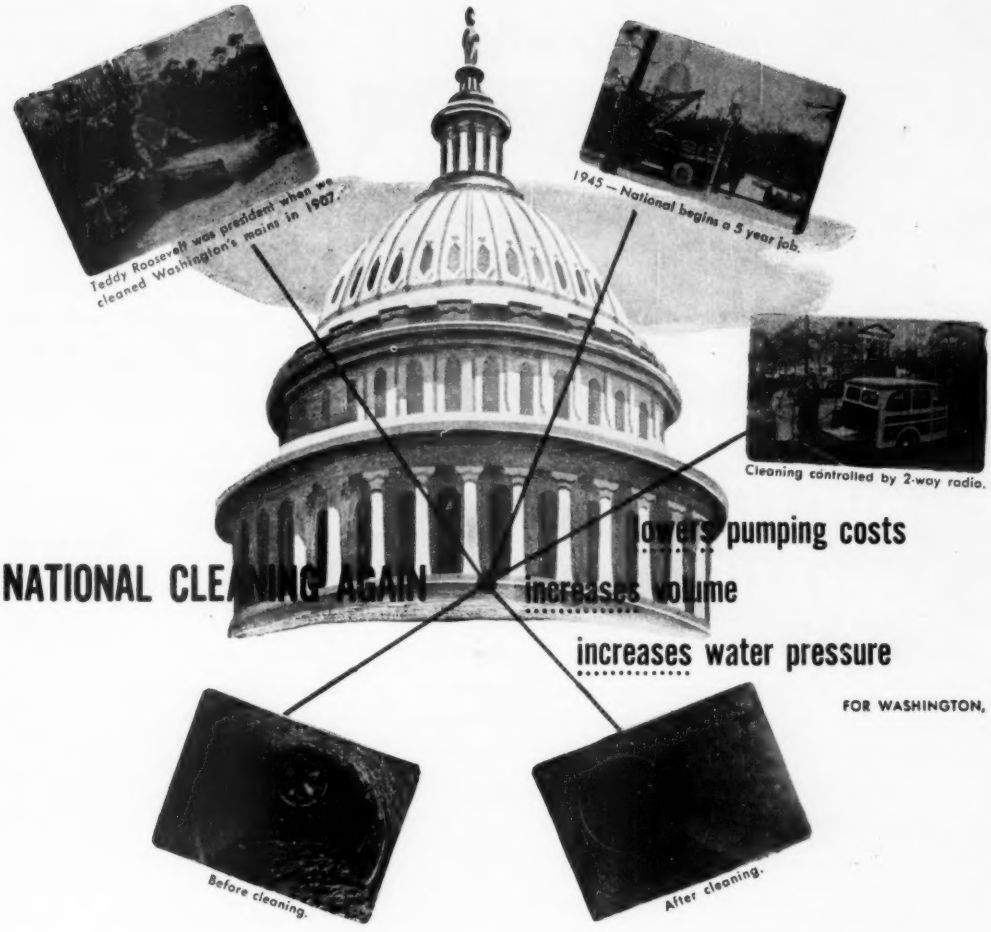
No Water Hammer, Water Loss, Freeze-Ups with This Hydrant

800 The Eddy hydrant opens fast and easily with the pressure and closes without water hammer; the stem is held in place below the main valve so that there is no water loss due to a bent stem in case of accident; it has positive drip action that automatically drains the hydrant barrel of all water when the hydrant is closed, safeguarding the hydrant against freeze-ups. Write the Eddy Valve Co., Waterford, N. Y.

Oil-Burner Control

801 Mercoid Visaflame control for use with intermittent or constant-ignition oil burners uses the light of the flame as a means of actuating the control system. It is a safety control that can be mounted as an integral part of the oil burner. Full explanation is contained in Bulletin V-14 of The Mercoid Corporation, 4201 Belmont Ave., Chicago, Ill.

(Continued on Page 30)


Teddy Roosevelt was president when we cleaned Washington's mains in 1907.
1945 — National begins a 5 year job.
Cleaning controlled by 2-way radio.
NATIONAL CLEANING AGAIN
lowers pumping costs
increases volume
increases water pressure
FOR WASHINGTON, D. C.
Before cleaning.
After cleaning.

Way back in 1907 and again in 1926 National successfully cleaned the water mains of Washington, D. C.

In 1945 a five year program to clean and recondition the entire water main system of Washington was begun and National in conjunction with the Centriline Corporation was successively awarded the cleaning contracts for 1945, 1946, 1947, 1948 and 1949 —in short, all the cleaning jobs to date!

Tests made on those lines already cleaned and centrilined indicate a co-efficient of over 130 as against less than 90 before cleaning, resulting in lower pumping costs, increased volume and higher pressure.

Let us estimate the cost of restoring your lines to at least 95% of their original carrying capacity. Write today.

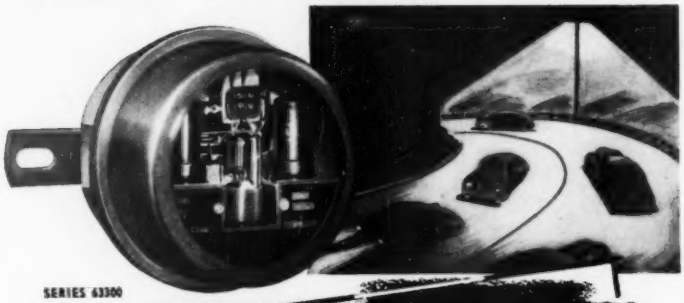
NATIONAL WATER MAIN CLEANING COMPANY

29

50 Church St., New York 7, N. Y.

ATLANTA, 333 Candler Building • ATLANTA, 1221 Mortgage Guarantee Building • BOSTON, 115 Peterboro Street • CHICAGO, Room 1336, 122 So. Michigan Avenue • FLANDREAU, S. D., 315 No. Crescent Street • KANSAS CITY, 422 BMA Building • LITTLE FALLS, N. J., Box 91 • LOS ANGELES, 448 South Hill Street • OMAHA, 3812 Castellar Street • RICHMOND, 210 East Franklin Street • SALT LAKE CITY, 149-151 W. Second So. Street • SAN FRANCISCO, 681 Market Street • SIGNAL MOUNTAIN, TENN., 204 Slayton Street • WACO, P. O. Box 887 • MONTREAL, 2028 Union Ave. • WINNIPEG, 576 Wall Street • HAVANA • MAYAGUEZ, PUERTO RICO • BOGOTA • CARACAS • MEXICO CITY

Reduce Accidents . . .



with FISHER-PIERCE

PHOTOELECTRIC STREET LIGHT CONTROLS

Foresighted municipal management the world over is turning to Fisher-Pierce for the answer to its street lighting problems, because photoelectric street lighting controls provide maximum:

SAFETY

Safety for pedestrians and motorists alike during the dangerous twilight period when most accidents occur. F-P controls provide light when natural light falls below a pre-selected safety level — regardless of time or weather.

DEPENDABILITY

Thousands of municipalities have adopted F-P controls because photoelectric street light controls never forget . . . in the event of control circuit failure, the lights go on.

ECONOMY

Installation, operation and maintenance costs are minimum. F-P controls require no re-setting in the event of power failure as compared to timeclock controls. Plug-in construction — no on-the-pole service. Approximate tube life two years. On multiple circuits additional lights may be added without duplicate power networks — at great savings. *To help you decide — investigate Fisher-Pierce Photoelectric Controls.* Write for complete information.

SPECIFICATIONS OF SERIES 63300 (ILLUS. ABOVE) INCLUDE:

1. Contact capacity 3000 watts of incandescent lamp load.
2. Standard Watt-Hour Meter enclosure. Weatherproof. Easy to install.
3. Mounting suitable for either Crossarm or Pole Surface.
4. Low first cost — minimum maintenance. (20,000 hours nominal tube life.)
5. Models for 120 and 240 volts, 50-60 cycles.

The FISHER-PIERCE COMPANY, INC.

94 CEYLON ST., BOSTON 21, MASSACHUSETTS

For You—Free

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10-15 HP Diesel

802 The Nordberg Mfg. Co., Milwaukee 7, Wis., describes in Bulletin 165 its new Type 4FS-1 four-cycle, one-cylinder, 4½-by 5¼-inch diesel engine. The 4FS-1 has a rating of 10 to 15 hp at operating speeds of 1,200 to 1,800 rpm and was developed to meet the need for a compact engine capable of continuing heavy-duty service for direct connection or belt drive as electric generating sets and as pumping units.

Thirty Minutes For Repairing Fire Hydrants

803 A Kennedy Safetop fire hydrant, damaged in a collision, can be repaired in just 30 minutes by one repairman equipped with three tools and a collision-breakage repair kit that consists of a breaking ring, coupling, 2 pins, and a gasket. Bulletin 62 describes the hydrant; write the Kennedy Valve Mfg. Co., 1030 E. Water St., Elmira, N. Y.

Which Type of Meter Do You Prefer?

804 The Pittsburgh Equitable Meter Div., Rockwell Mfg. Co., Pittsburgh 8, Pa., makes both the oscillating piston and the disc-type meters. The Empire oscillating piston meter comes in sizes of ⅝, ¾, and 1 inch. The Type 12 meter, for cold climates, is made with a breakable frost bottom and a bronze case. The type 14 is a bronze-bottom-plate model for warm climates. The Pittsburgh Nutating disc meter, in the same sizes, comes in the Arctic model with a breakable frost bottom, and the all-bronze, split-case Tropic model.

Four Forward Speeds In Gate Operation

805 The Dean gate operators are available in a truck-mounted model for heavy duty—such as closing gates against unbalanced flow resulting from ruptured line. It operates gates from 12 to 48 inches and comes in two sizes. This operator provides all the power that may safely be applied to the gate, with the power definitely limited by the shear-pin coupling. Literature may be obtained from Payne, Dean & Co., Madison, Conn.

Where and How To Use Ferric Chloride

806 A simplified manual on the properties, uses, and methods of handling ferric chloride has been prepared by the Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia 7, Pa. It may be used as a coagulant in the precipitation of sewage and sewage-sludge conditioning, to form iron salts as a mordant, and as a catalyst in organic reactions.

Meters Accurate Even in Low-Flow Ranges

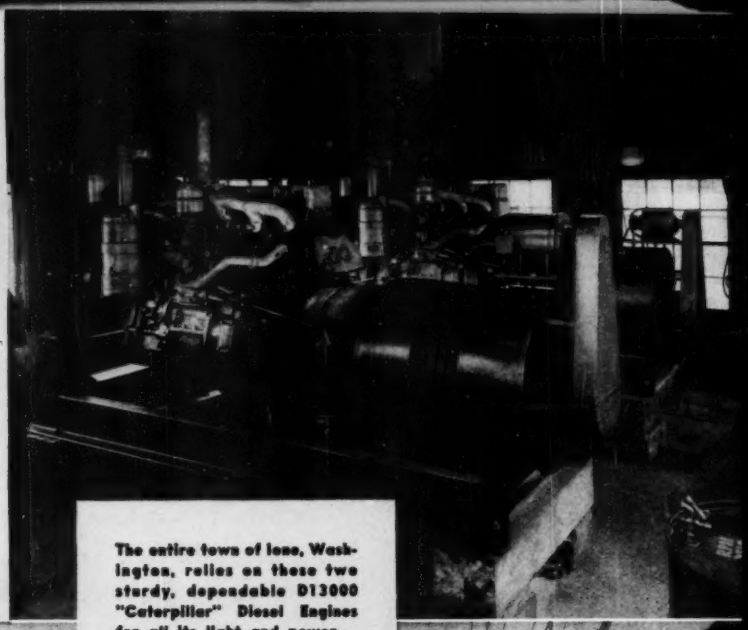
807 Trident Style 3, 1½-inch and 2-inch meters are not only particularly sensitive at low rates of flow, but can also handle high rates within their range. Built on the principle of interchangeability, replacements and maintenance can be accomplished quickly and economically. Write for data to the Neptune Meter Co., 50 West 50th St., New York 20, N. Y.

Signs That Work Nights

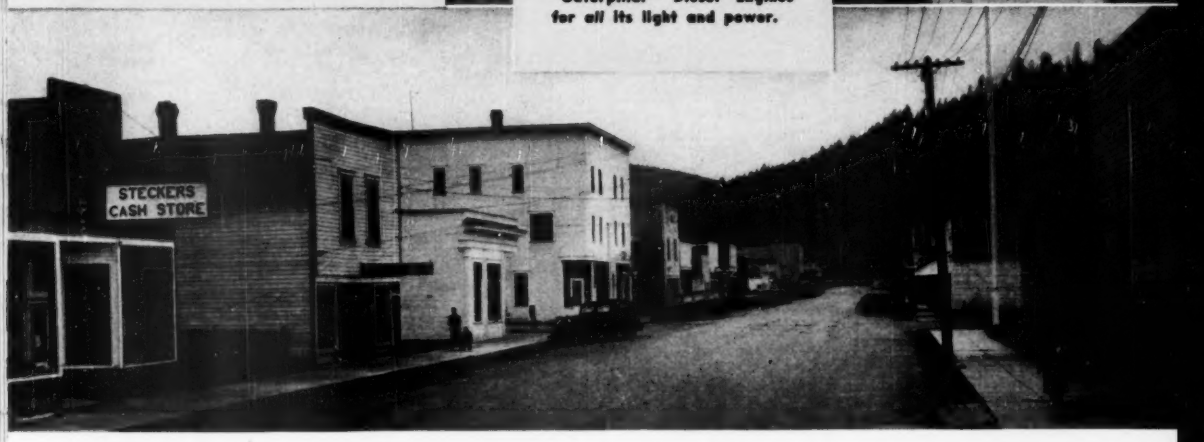
808 The Prismo Sign Kit contains all the makings for a highly reflective surface—signs on bridge abutments and underpasses and on bulky sign-posts. The Prismo binder is applied by spray or brush; then the spheres are sprayed on the wet binder by a hand spray—and the job is finished. Ask for Bulletin 547, the Prismo Safety Corp., Huntingdon, Pa.

(Continued on Page 32)

More than 80,000 hours of faithful service



The entire town of Ione, Washington, relies on these two sturdy, dependable D13000 "Caterpillar" Diesel Engines for *all* its light and power.



About 600 people, the entire population of Ione, Washington, depend on two D13000 "Caterpillar" Diesel Engines driving Electric Machinery generators for *all* their light and power. One was installed in November, 1940—the other, in May, 1941. Together they have provided more than 80,000 hours of trouble-free service to homes, stores, schools and the hospital in the community.

One D13000 is run constantly, while the other operates from six to eight hours a day during peak periods. This dual setup provides an efficient, economical answer to fluctuating requirements, and is adaptable to the needs of any size or type of community.

Have you looked into the possibilities of dependable, money-saving, long-lived Diesel power for *your* community recently? It can be time well spent. Your "Caterpillar" dealer, now in position to furnish prompt delivery of "Caterpillar" Diesel Engines and Electric Sets, will be glad to give you complete information about them. He's as near as your telephone—why not call him today!

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

You Need a KENNEDY Hydraulic-Control Valve . . .

WHERE valves are installed in inaccessible locations.

WHERE rapid opening or closing of valves is desired.

WHERE numerous valves are to be operated frequently.

WHERE easy opening of extra-large valves is desired.

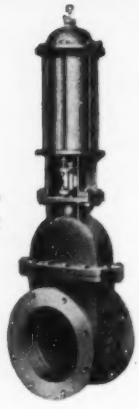


FIG. 611 FTR. Bronze cylinder with Tie-Rods, standard up to 12" diameter.

FIG. 611 F. Cast-Iron, Bronze-Lined Cylinders, standard over 12" diameter.

KENNEDY Hydraulic or Cylinder-Control Gate Valves are available for steam, air, oil or cold water service.

Actuated by water, air or oil under pressure, the valve is controlled by a four-way valve located on any reliable pressure-supply line within reasonable distance from the valve. Piston rod extends through cylinder and indicates position of the discs.

Pressure must be maintained in the cylinder on Hydraulic-Control Gate Valves to hold the closed position, unless valve stem is horizontal or hanging vertically from the disc.

Use the check list below and write for further details and prices of KENNEDY Hydraulic-Control Valves to meet your particular requirements.

CHECK LIST FOR INQUIRIES AND ORDERS

- ☐ Size of valve and whether bronze or cast iron bronze-lined cylinder.
- ☐ Working or test pressure and actual unbalanced pressure on discs.
- ☐ Type connection; flanged, bell ends, or special.
- ☐ Position of valve in pipe line.
- ☐ Dependable pressure available for cylinder operation and whether cold water, air or oil, etc.
- ☐ Brief description of installation, fluid or gas controlled, frequency of operation and function of the valve.

THE KENNEDY VALVE MFG. CO.
1030 EAST WATER ST.
ELMIRA, NEW YORK
VALVES · PIPE FITTINGS · FIRE HYDRANTS

OFFICE-WAREHOUSES IN NEW YORK, CHICAGO, SAN FRANCISCO • SALES REPRESENTATIVES IN PRINCIPAL CITIES

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Bucket Loader Moves Fast

809 The 545A bucket loader's boom goes into a horizontal position for transport from job to job, reducing over-all height and speeding up the job-to-job transfer. There are primary and secondary transmissions, a separate crowding clutch, three forward speeds, and a quick reverse. For information about the 545A with 8-foot synchronized spiral feed, write the Barber-Greene Co., Aurora, Ill.

Clean, Safe Swimming Pools

810 Bull Frog Saf-T-Klenz removes rust stains, lime deposits, soap oil, body grease, and algae formation from shower rooms and swimming pools. Write for a free sample to the Berman Chemical Co., 715 Superior St., Toledo 4, Ohio.

Elevated Storage Improves Water Service

811 One of the services performed by an elevated water tank that is highly appreciated by the citizen is greater pressure from the faucet. The Chicago Bridge & Iron Co., 2127 McCormick Bldg., Chicago 4, Ill., will send you data and also show you the actual architectural blending of the right style of tank with the scenic background.

Dry Fire Hose Lasts Longer

812 Fire hose that has been thoroughly dried after each using has a longer life expectancy, and the Circul-Air fire-hose dryer also shortens drying time, prevents mildew and rot, and air conditions as it dries. Write the Circul-Air Corp., 575 E. Milwaukee, St., Detroit 2, Mich.

Turbine-Driven Pump

813 Within the last years, Chicago has installed De Laval pumping units having a capacity of 1,245 mgd, including a 75-mgd pump driven by a De Laval turbine employed to provide power at varying rates of delivery. Write for data about pumping units to the De Laval Steam Turbine Co., Trenton 2, N. J.

Do You Want An Improved Lawn?

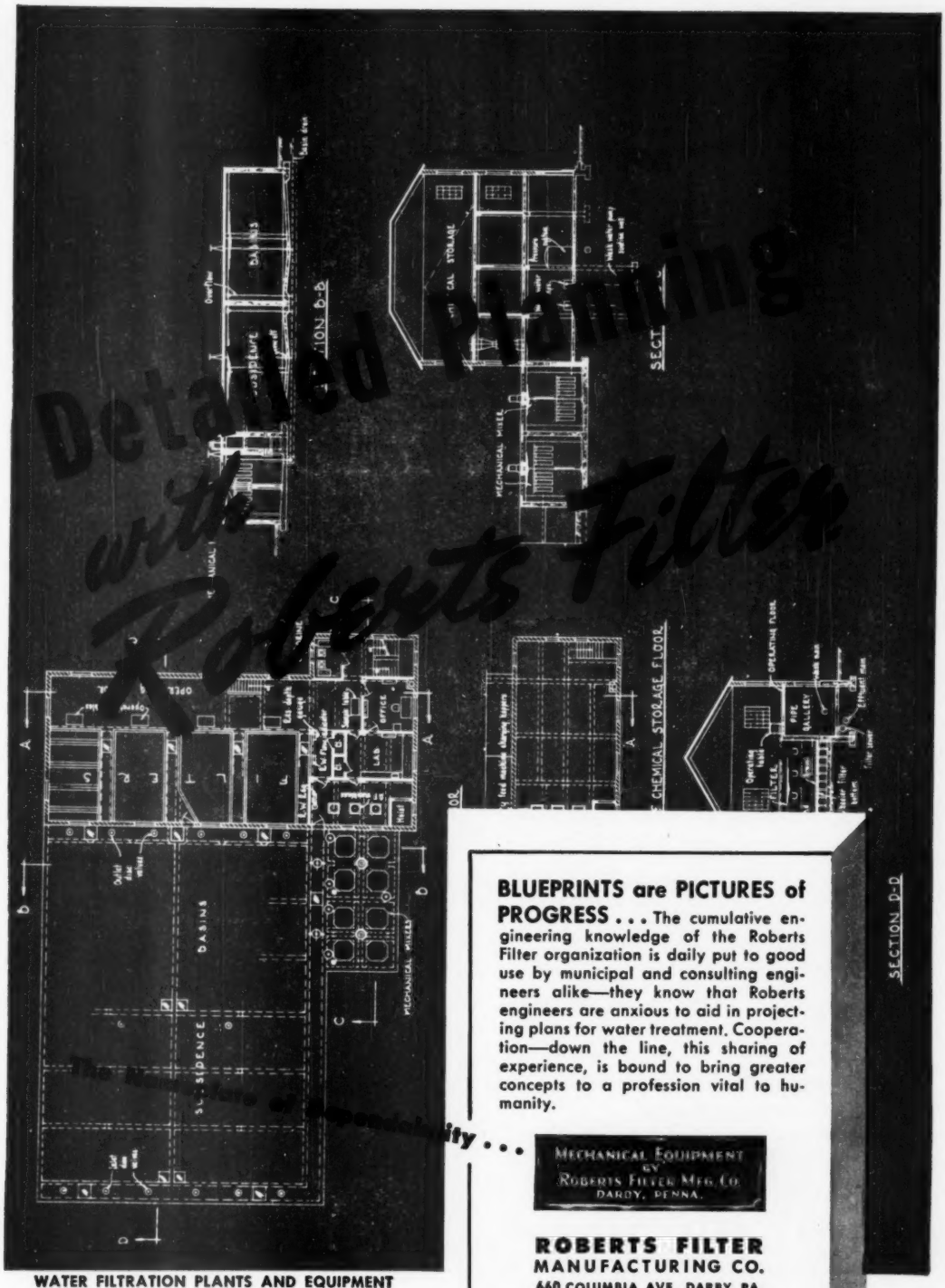
814 O. M. Scott and Sons Co., Maryville, Ohio, will send you data showing graphically how to go about getting a good strong turf. Among the steps described are the choice of grasses according to climatic conditions, how to build up turf with the right lawn food and weed controllers, spraying for a healthy turf, types of spreaders for facilitating turf maintenance, and preparations to check pests. Write for a free copy of *Lawn Care*.

Pneumatically Placed Concrete

815 The Gunite Construction Corp., 420 Lexington Ave., New York 17, N. Y., will send you data on its method of pneumatically placing dense, durable, high-strength concrete for restoring disintegrated concrete; dam, dock, and bridge repairs; steel encasement and fireproofing; sewer, water pipe, and penstock lining; pressure grouting of swimming pools; and prestressed tanks and silos.

Cinder Spreaders

816 On the Baughman cinder spreaders there are patented safety baffle plates that prevent injury to pedestrians and damage to passing automobiles. The distributor is high enough off the ground to prevent it from being damaged by backing into ice or snow drifts. The material is sprayed on the road by dropping downward and not being thrown. The baffle plates are adjustable to widths of 8 to 30 feet. Write the Baughman Mfg. Co., Inc., 411 Shipman Rd., Jerseyville, Ill.



BLUEPRINTS are PICTURES of PROGRESS . . . The cumulative engineering knowledge of the Roberts Filter organization is daily put to good use by municipal and consulting engineers alike—they know that Roberts engineers are anxious to aid in projecting plans for water treatment. Cooperation—down the line, this sharing of experience, is bound to bring greater concepts to a profession vital to humanity.

MECHANICAL EQUIPMENT BY ROBERTS FILTER MFG. CO. DARBY, PENNA.

ROBERTS FILTER MANUFACTURING CO.
660 COLUMBIA AVE., DARBY, PA.

WATER FILTRATION PLANTS AND EQUIPMENT
SPECIAL WATER TREATMENT EQUIPMENT
ZEOLITE SOFTENERS • PRESSURE FILTERS
WHEELER FALSE FILTER BOTTOMS

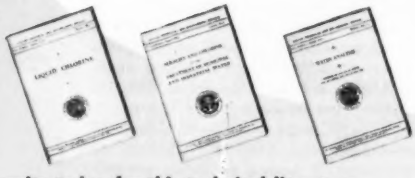
FOR TREATMENT OF SEWAGE AND INDUSTRIAL WASTES

SOLVAY helps you 3 ways!

. . . with finest quality SOLVAY LIQUID CHLORINE, SODA ASH, CALCIUM CHLORIDE

. . . with speedy delivery from SOLVAY's strategically-located plants and warehouses

. . . with sound, proven technical and engineering information on the treatment of sewage and industrial wastes



write today for this technical literature:

BULLETIN #7—"Liquid Chlorine"

BULLETIN #8—"Alkalies and Chlorine in the Treatment of Municipal and Industrial Wastes"

BULLETIN #11—"Water Analysis"

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ALLIED CHEMICAL & DYE CORPORATION
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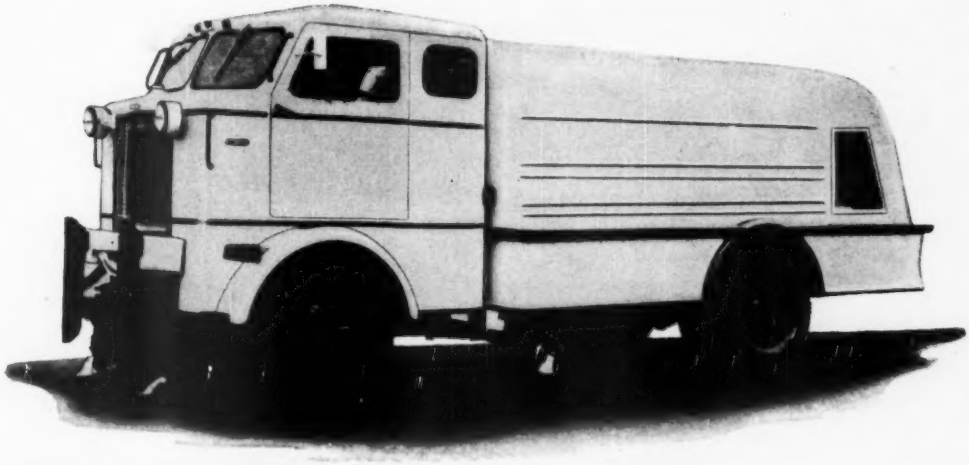
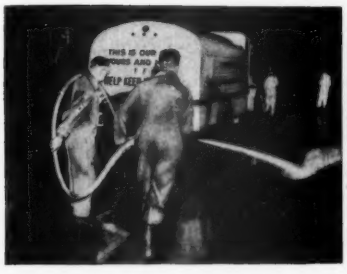
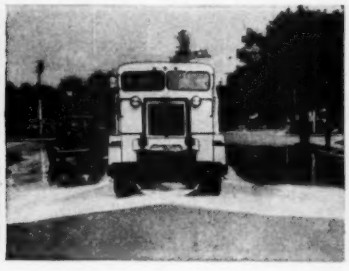
THE SICARD MASTER FLUSHER







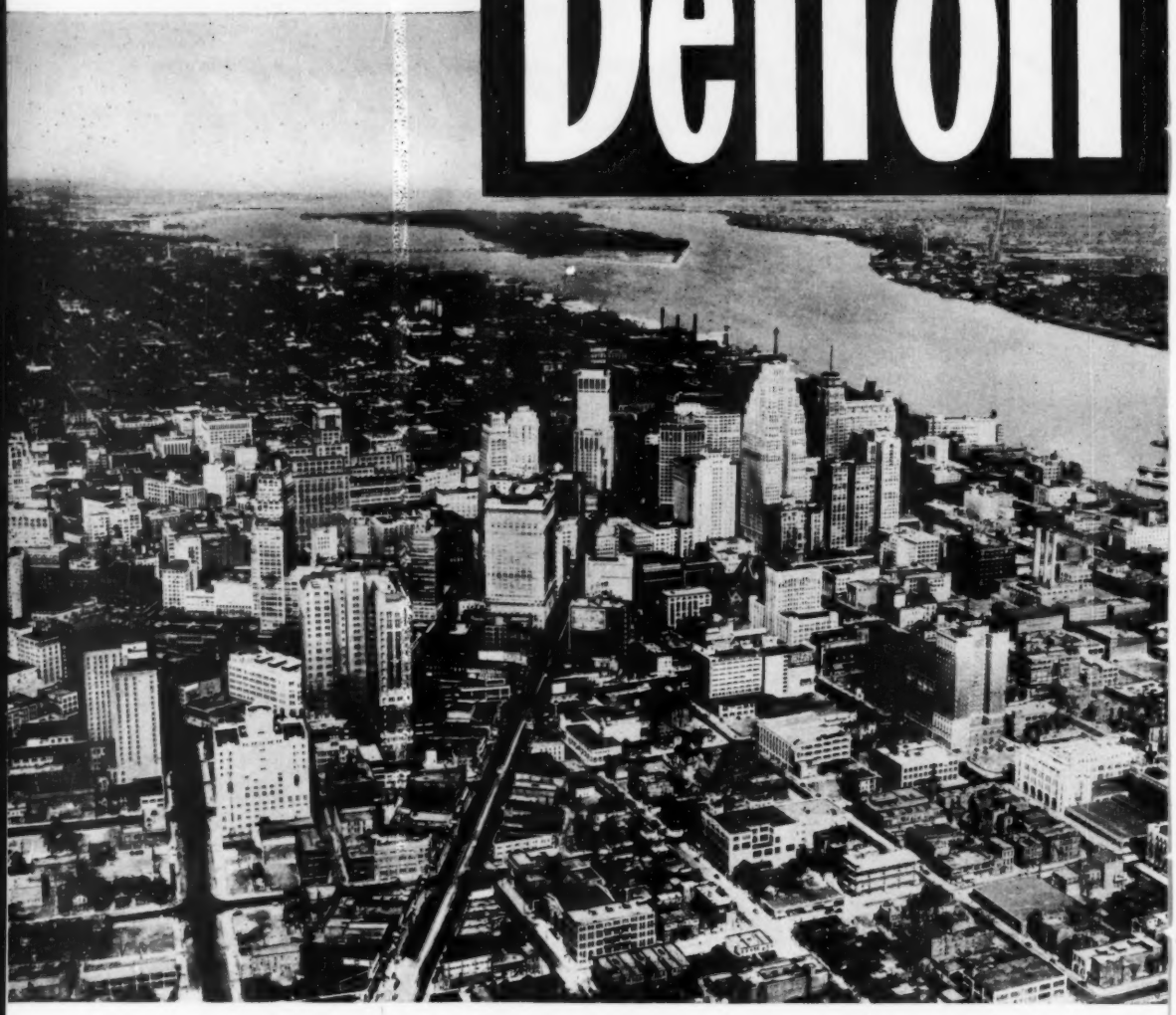
- Flushes streets clean under controllable pressure from four adjustable jets . . . gives curb-to-curb cleaning. (*Centre, above.*)
- Can be used as a sprinkler to dampen down dust on unpaved roadways or playgrounds.
- Ample water capacity and hose connections for flushing subways. (*Left, above*).
- Equipped for use as pumping unit as an auxiliary to other fire department equipment.
- Parks departments use the Master Flusher for spraying flowerbeds, shrubs and trees.
- Powerful hose spray for insect control on refuse dumps, etc. (*right, above*).
- The rugged SICARD Master Flusher is fitted with a tank of 2,000 gallons capacity, refillable in four minutes at any hydrant. In winter the SICARD Master Flusher unit can be replaced with a SICARD "Snow Master" unit, or fitted with an underbody scraper and snowplow, to provide year 'round usefulness.

MANUFACTURERS OF THE SICARD "SNOW MASTER", SICARD "SANIVAN", SICARD HEAVY DUTY TRUCKS, AND THE NEW SICARD "SNOW MASTER JUNIOR"

SICARD

SICARD INDUSTRIES INC. • 753 West Main St., Watertown, N. Y.

Detroit



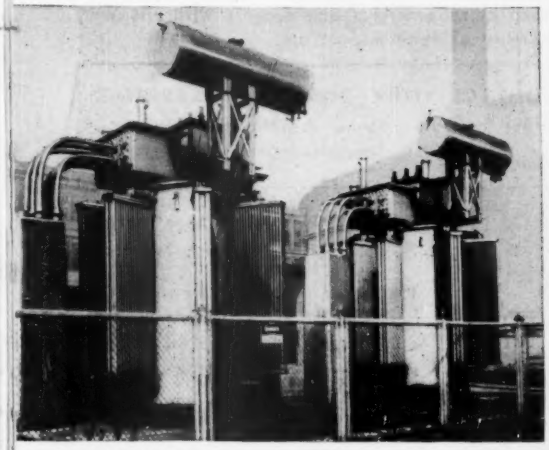
Thrifty Cities See *Dollars Go Further* With Reliable, Low Maintenance A-C Products

THAT'S WHY so many cities — large, medium and small — are using more and more Allis-Chalmers equipment today. Detroit's sewage pumping stations and disposal plants for years have used Allis-Chalmers synchronous motors and transformers. One water works pump station is equipped with a battery of A-C centrifugal pumping units.

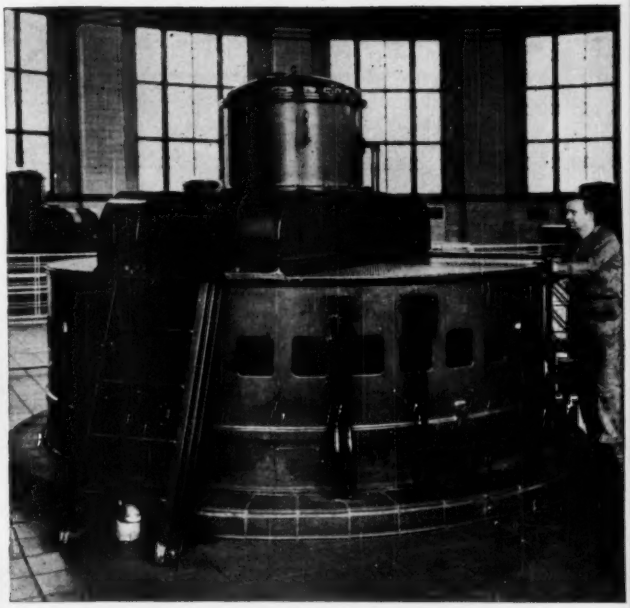
Tax conscious cities, caught between lagging incomes and rising costs, are discovering that *budgets go further* with A-C equipment. A-C centrifugal pumps, for example, have met every efficiency rating guaranteed for them. Allis-Chalmers motors and turbines are designed to fit the specific pump for which they are built. Electric power needs are met with Allis-Chalmers power and distribution transformers . . . protected, controlled and regulated with A-C metal-clad switchgear and control devices.

No other company offers coordinated equipment engineering for so many electrical and mechanical public works products. For more information on how *your* city can benefit from buying Allis-Chalmers equipment, we will send you a free copy of Bulletin 25B6607. *Write for it today.*

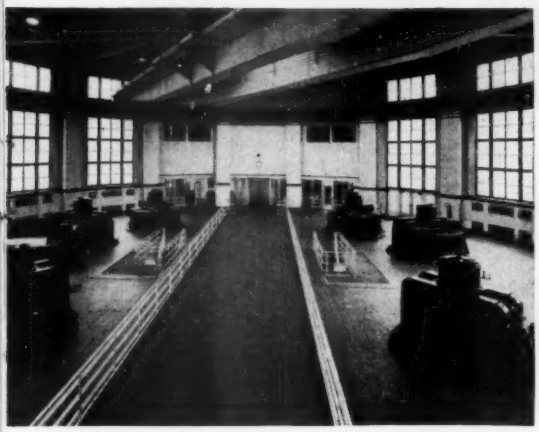
KNOWS DEPENDABLE MUNICIPAL EQUIPMENT!



THESE "Old Faithfuls" have given dependable service in Detroit's public works for many years. Today, new Allis-Chalmers transformers can be equipped with Load Ratio Control devices to provide close voltage regulation during the hours of peak load and low load pumping periods.



CIRCULAR shaped Detroit sewage disposal plant pump room is equipped with six Allis-Chalmers synchronous motors. Your community can save money by taking advantage of Allis-Chalmers experience in designing and building both electrical and mechanical public works equipment.



1250 HP synchronous motors drive sewage pumps in Jefferson Avenue sewage disposal plant. Allis-Chalmers has designed and manufactured all sizes and types of motors and turbines for driving centrifugal pumps for all sizes of communities all over the country.

ALLIS-CHALMERS, 1185A SO. 70 ST.
MILWAUKEE, WIS.

WELCOME A.W.W.A.

When your convention meets in Chicago, May 29 through June 3, Allis-Chalmers extends to each of you the wish that your stay will be both pleasant and profitable. We invite you to drop in and visit our exhibit in the Stevens Hotel. We'll be in booths 133, 134.

A 2695

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

Builders of the World's Widest Range of Public Works Equipment

LEAF REMOVAL IS *easy* AND *economical*

.....WITH Good Roads MACHINERY LEAF COLLECTOR

Your community can now enjoy an economical leaf removal program. If insurmountable costs have made leaf removal impossible in your community, the efficient, two man operated Good Roads Leaf Collector is the answer to your problems. This compact, self contained unit will assure clean and leaf-free streets with the very minimum of time and effort.

PREVENT CLOGGED SEWERS and SLIPPERY PAVEMENT!

CONTACT YOUR GOOD ROADS DEALER
or the factory for further detailed information or a demonstration.

CAN BE DRAWN BY ANY MOTIVE POWER: truck, tractor, jeep, etc.

The rubber tired snoot for all purpose leaf collecting (illustrated below) and the simple Hanger Arm unit (at left) are standard equipment.

FEATURES

FLEXIBLE INTAKE HOSE . . . . . .
easily maneuverable into driveways, under and around autos, in gutters, around corners and catch-basins and under cross-walks.

RUGGED ROTOR BLOWER ASSEMBLY . . .
inhales and pulverizes wet or dry leaves in one operation.

HYDRAULIC SYSTEM . . . . . .
operates independently . . . makes hook-up and dumping almost instantaneous.

SPACIOUS LITTER CARRIER . . . . . .
holds blocks and blocks of pulverized leaves and debris.

SPECIAL FILTERS . . . . . .
keep surrounding air clean and dust-free.

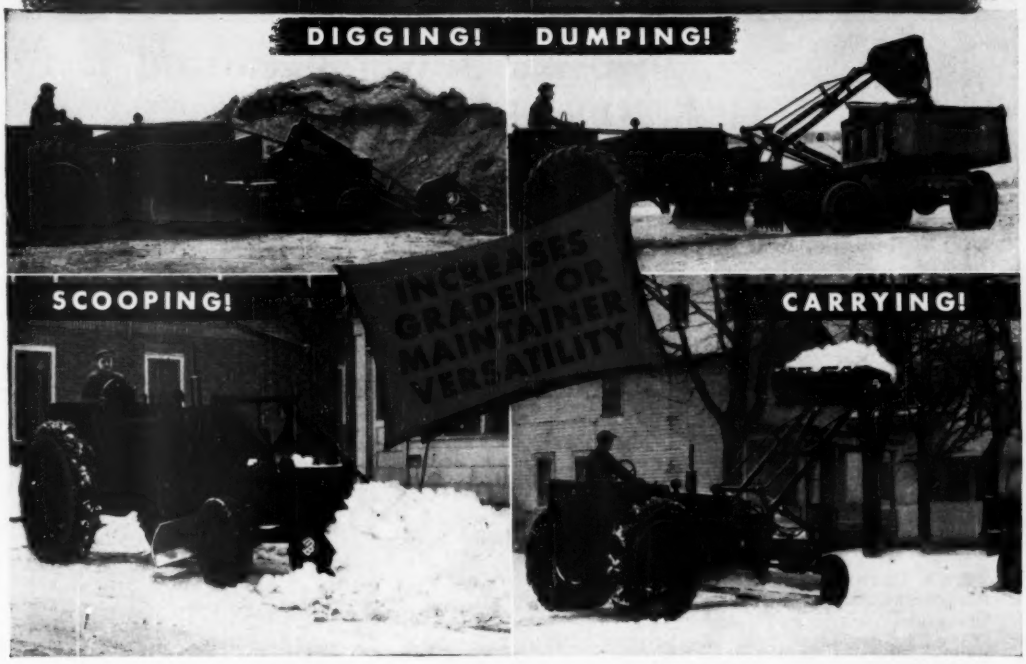
NO NEED TO DUMP LEAVES!

After passing through the rotor blower, the leaves are pulverized and become "compost," the best natural fertilizer known . . . . . .

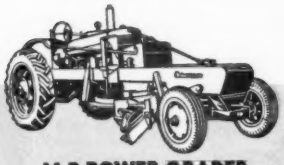
Scores of citizens will be eager for "compost" for their gardens.

GOOD ROADS MACHINERY CORP. MINERVA, OHIO

M-B FRONT-END LOADER...



The M-B Front-End Loader, mounted on M-B Power Grader or Maintainer, adds many productive hours to this type of equipment. It digs, grades, stock piles, loads trucks, moves materials, removes snow, etc. Hydraulic double acting ram actuates tilting and dumping of bucket which pushes directly against main frame. A single lever controls digging pitch, raising, levelling, dumping and shaking operations. 2 bucket sizes. By removing bucket, either backfiller blade or crane hook can be added. Loader takes less than 30 minutes to mount. Costs less than conventional type loaders. Ideal for contractors, airports, highway departments, municipalities, counties, etc. Write for Bulletin 146.



M-B POWER GRADER

Designed for all types of grading and filling jobs. Hydraulic controls make it easy to operate. Used by state highway departments, counties, cities and industrial plants. Low operating and maintenance costs.

M-B MARKERS

Ideal for striping streets, parking areas, airports, playgrounds, industrial plants, etc. Rugged, compact construction. Hand or self-propelled models. M-B Markers are versatile to operate . . . have a large capacity . . . provide fast, low-cost striping.

M-B TRAILERS

Sturdily constructed with all-steel welded frames and Tilt-Bed platforms for easy loading. Designed for hauling various types of tractors with attachments, rollers, tampers, shovels, graders, ditchers, air compressors, etc. Sizes 2½ to 10 tons.

M-B MAINTAINER

Lightweight Maintainer engineered for heavy duty maintenance work. For contractors, towns, cities and highway departments. Attachments such as cab, scarifier, power sweeper, snow plow, bulldozer blade, and leaning wheels, available.

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A 5578-1P-C

Modernize—Powerize—Economize!

TURCO MAXI-POWER UNIT NO. 2

Models
VF3—Water-Cooled
ZF3—Air-Cooled

7 Power Sewer Cleaning Units *Offered by* TURBINE

Write for this catalog and get Maxi-Power specifications.

EXCLUSIVE FEATURES:

1. Tubular frame
2. Forged, inclosed gearing
3. One clutch
4. Flange ball-bearings
5. Designed level wind
6. 3-speed transmission
7. High-speed chain drive
8. No-clutch free spooling
9. Selected speeds
10. Bucket swing positioner

Unskilled labor built these walls

Closed Face—below.
Open Face — above.

. . . and saved money on construction costs. Precast Universal cribbing, made in both open-and closed-face types, is easily handled in building long-lasting retaining and load-bearing walls . . . 100% salvagable if ever removed. *Write for bulletin C-49.*

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CONCRETE PIPE COMPANY
297 S. High St., Columbus 15, Ohio

CONCRETE PIPE for storm and sanitary sewers, culverts and all drainage problems . . . sizes 4 to 120 inches.

Decatur, Ala. Dothan, Ala. Atlanta, Ga. Kenvil, N. J. New York City, N. Y. Port Washington, N. Y. Syracuse, N. Y. Rochester, N. Y. Binghamton, N. Y. Columbus, O. Zanesville, O. Norristown, Pa. Pittsburgh, Pa. Nashville, Tenn. Clarksburg, W. Va. New Martinsville, W. Va. Wheeling, W. Va.

Now.. you can Feed Dry Chemicals with Greater Accuracy and Efficiency

Install the Sturdy, Compact

TYPE E4

Dry Chemical Feeder

INFILCO'S new TYPE E4 Feeder brings a new, high degree of *sustained* accuracy and efficiency to the feeding of dry chemicals. It represents more than 25 years of constant development and perfection . . 25 years of *experience* in the design and manufacture of Chemical Feeding Equipment for water purification and sewage or waste treatment operations. You can expect the "E4" to feed many millions of pounds of chemicals with *unvarying accuracy* and a minimum of upkeep cost. Adjusting the feed rate is a quick, easy job. Simple, sturdy and compact, this *better* Feeder will give dependable, *dust-free* service for years. Made for either constant rate or automatic proportional feed operation. May we send you complete information?

AT THE A.W.W.A. CONVENTION..

See a demonstration of the many superior advantages of the new TYPE E4 Dry Chemical Feeder in **BOOTH NO. 32** *at the A.W.W.A. Convention—Stevens Hotel, Chicago, May 29th to June 3rd.*

FREE LABORATORY SERVICE . . SEND FOR THIS WATER CONDITIONING ANALYSIS SHEET!

Make sure your water meets the exacting specifications you require. Send for our Water Analysis Sheet, then fill in and return it with a sample. You will receive our laboratory analysis and report promptly. A valuable INFILCO CHEMICAL CALCULATOR slide rule sent FREE to all who return our analysis sheet properly completed. *No cost or obligation is involved for this laboratory service.*

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INFILCO INC.

GENERAL OFFICES: 325 WEST 25th PLACE • CHICAGO 16, ILLINOIS

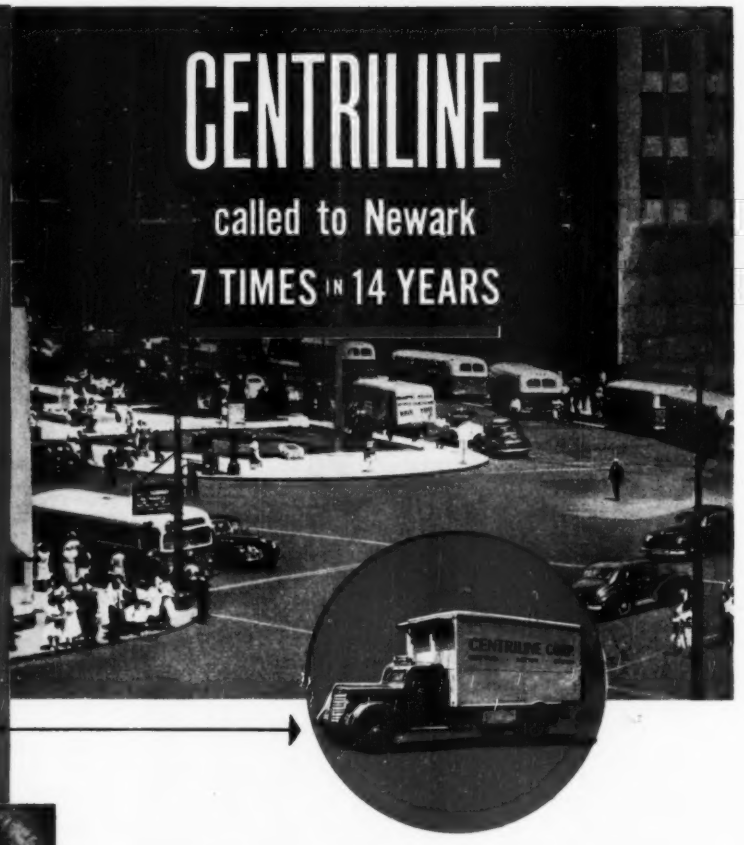
SALES OFFICES IN TWENTY SIX PRINCIPAL CITIES

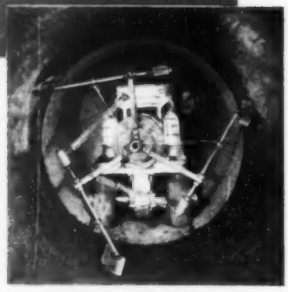
WORLD'S LEADING MANUFACTURERS OF WATER CONDITIONING AND WASTE TREATING EQUIPMENT

where performance counts . . . count on Centriline

CENTRILINE

called to Newark 7 TIMES IN 14 YEARS





1935 Centriline did its first work for the city of Newark, N. J.—cleaned and lined with cement mortar 27,551 feet of 48″ riveted steel pipe. The capacity of this 40-year old pipe was thereby increased 77%—*12% higher than the original capacity—and it has stayed there!*

That may explain why Centriline has been called back again and again to recondition more of Newark's vital water mains. To date, more than 40 miles of these mains have been Centrilined.

If your pipeline investment is under attack by tuberculation and corrosion—if your maintenance and pumping costs are rising—if your mains deliver less water at a time when you need more—call on Centriline. Like Newark, your city will find that it pays!

CENTRIFUGALLY APPLIED in strict conformity with A. W. W. A. Specifications.

CEMENT MORTAR LININGS FOR WATER MAINS

CENTRILINE CORPORATION

140 CEDAR STREET

NEW YORK 6, N. Y.

CENTRILINE PROCESS

Save...

Time, Money and Labor in making pipe joints

« « « The only field equipment necessary to make a Universal Cast Iron Pipe Bolted Joint is a Ratchet Wrench.

by using

UNIVERSAL* CAST IRON PIPE

(PIPE and JOINT are ONE)

*Reg. U. S. Pat. Off.

Outstanding Advantages:

(1) *No calking or pouring of lead or lead substitutes. No gaskets used.*

(2) No bell holes to dig. Can be laid in a narrow trench. Cost of wide trenching is eliminated.

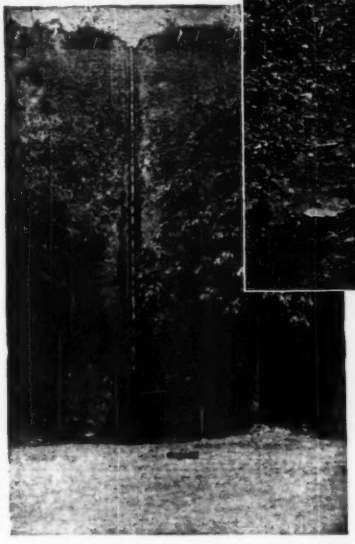
(3) *Can be laid with SPEED. Easier and cheaper to install because only two bolts need to be inserted in the lugs, tightened with a ratchet wrench (the only tool needed), and the completed joint is made in a few minutes. Experienced workmen are not needed.*

(4) Nothing to deteriorate; nothing to work loose, no leakage; no maintenance cost.

(5) Flexibility: Universal pipe is very flexible. It withstands expansion, contraction, unequal settlement, vibration and shock, and electrolysis. Many curves are laid with straight lengths and do not need special fittings.

(6) *Universal pipe can be laid on rocky soil, under water and in sub-zero weather.*

THE CENTRAL FOUNDRY CO.
386 FOURTH AVENUE, NEW YORK 16



Above *All straight lengths of Universal pipe in this curve.*

At left *16" pipe laid on a 45-degree slope. Note deflection at top to level ground without fittings.*

USE THE COUPON

DEPT. C

THE CENTRAL FOUNDRY COMPANY
386 Fourth Avenue, New York 16, N. Y.

I am interested in SAVING LABOR, TIME, MONEY and EQUIPMENT in pipe-laying. Send me the UNIVERSAL catalog.

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BURN..... *all dry Refuse with* ONE *handling!*

Use the New Westchester Utility & Burning Cart the PORTABLE INCINERATOR

It's so obvious! ONE man . . . with ONE handling . . . *completely* disposes of dry, burnable refuse quickly, effortlessly . . . ONE MAN collects *paper, leaves, brush, grass cuttings,* etc. . . . drops it into this 40"-high Burning Cart . . . strikes a match . . . in a minute it's gone — no more handling! The ash catcher protects grass. Dead ashes are thrown away or scattered to nourish lawns.

CARTING — 18 cu. ft. Several times wheelbarrow capacity.

BURNING—Welded steel. Built to last—for years!

DUMPING — Perfect balance. All loads easily handled.

SAVES MONEY because it SAVES TIME!

With this incinerator-cart one man does the work of many—in one operation. Cart's 18 cu. ft. capacity saves trips. Perfect balance means bigger, easy-to-handle loads . . . of course, burning-on-the-spot saves loading, trucking, dumping, etc. operations. Result: money saved and a better job done!

SHOW TAXPAYERS YOU'RE ECONOMIZING!

With many Municipal and State budgets tight, now is the time you must economize —and still do the job! The initial cost of these long-lasting Carts will be returned through payroll savings . . . Order now for summer and fall use.

Shipped uncrated, by Railway Express, collect. F.O.B. Yonkers, N.Y. **$69.50** (10% discount in lots of 10)

For detailed description, specifications, write

COUNTY SPECIALTIES

P. O. Box 626, Port Chester, N. Y.

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DIXIE TANK AND BRIDGE CO.

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by welding seams, pits and rivets which gives a riveted tank 15% more Safety Factor than it had when built. No rivets removed, water supply maintained while work is in progress. On completely re-conditioned jobs, the painting is guaranteed for five years, repairs guaranteed for ten years, provided the tank is painted every five years. Yearly inspection, making all adjustments, if any, without additional cost.

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SOUND PRINCIPLES OF WATER TANK MAINTENANCE and TANK TALK, *by* W. A. RILEY

SAFETY • SERVICE • SATISFACTION

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THE LARGEST ORGANIZATION OF ITS KIND GIVING SAFE MAINTENANCE AT LOW COST

Fairchild Aerial Photo

At left:

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WATCH DOG

DISC WATER METER

REGULAR
FROST-PROOF MODEL

Also Turbine and Compound Types

Write for Circular

WORTHINGTON-GAMON METER COMPANY

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Works: NEWARK, NEW JERSEY
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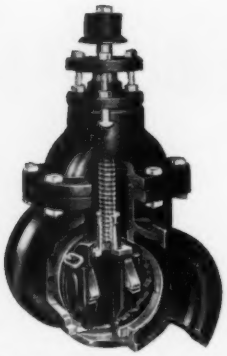
IOWA products

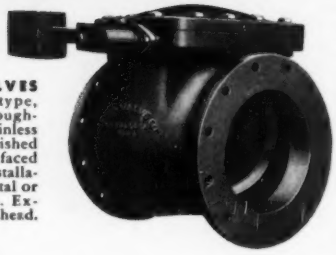
meet your most exacting specification

Superiority of Design, Workmanship, and Materials Assures Efficient Trouble Free Operation . . .

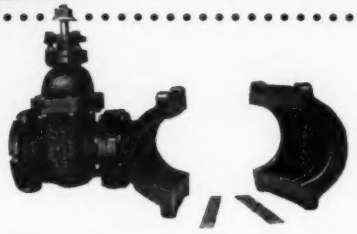
In every job



IOWA GATE VALVES—Simple, rugged construction, fully bronze mounted. Parallel seat, double disc type with independent solid bronze wedges and stem nut. Trouble free service assured.



IOWA CHECK VALVES—Balanced swing type, bronze trimmed throughout. Equipped with stainless steel hinge pin. Furnished with rubber or leather faced disc if desired. For installation in either horizontal or vertical pipe lines. Extremely low loss of head.



IOWA TAPPING SLEEVES and VALVES—Sturdily built, easy to assemble and center on pipe. All bolted type with lead strips for tight sleeve connections. Extra long body sleeves with heavy flanges amply protect the cut. All sizes available.

IOWA FIRE HYDRANTS—Latest Corey type conforming to AWWA specifications. Will not geyser when standpipe is broken. Unique design provides unrestricted water flow with extreme low loss of head.

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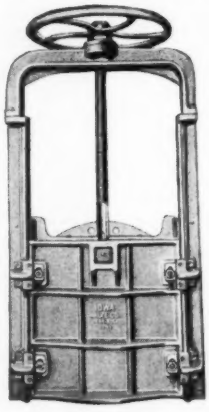
IOWA HYDRAULIC VALVES—Superiority of design matched with sturdy construction meets severe, continuous filter service requirements. Available with either iron, brass lined or brass tubing cylinders.



IOWA SLUICE GATES—Heavy cast iron construction, fully bronze mounted. Provided with solid bronze adjustable wedges. Suitable for seating and unseating pressures. Wide range of sizes.

Write today for descriptive literature.

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Model HL Payloader loading truck in gravel pit

Another "Right Spot" for a Versatile PAYLOADER!

DIG • LOAD

GRADE • CARRY

BULLDOZE

EXCAVATE

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PUSH • PULL • LIFT

REMOVE SNOW

Yes, Payloaders do *many* jobs well because they are *complete* Tractor Shovels — not tractor attachments — and have features built into both tractor *and* shovel that guarantees more output on more kinds of jobs. For example: there are several speeds forward *and* reverse; separate, quick, directional shift; full-visibility operator location; rear engine mount giving more traction, balance and work capacity; powerful hydraulic digging action; automatic, even-keel carry position; fingertip hydraulic control of bucket dumping speed and bucket closing; sharp turning radius; large pneumatic tires all around for more traction and flotation; choice of gasoline or diesel power. And there are Hough's 28 years of tractor shovel design and building behind them. For the best in Tractor Shovels consult your Payloader Distributor or write The Frank G. Hough Co., 710 Sunnyside Avenue, Libertyville, Illinois.

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on any of the four sizes of Payloaders: the 10½ cu. ft. Model HA; the ¾ yd. Model HF; the 1¼ yd. Model HL; the 1½ yd. 4-wheel drive Model HM.

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Manufactured by THE FRANK G. HOUGH CO.

GEOPHONE locates leaks without digging

"Registered in U. S. Patent Office"

When the discs are placed on the ground (as pictured) the Globe Geophone detects by sound the exact location of leaks in water or steam pipes. Acclaimed for its accuracy, the Globe Geophone has become indispensable in Public Works Departments and Industrial Plants throughout the United States.

• MONEY-SAVING

You save the costly expense of extensive surveys, excavating and replacing. The inexpensive Globe Geophone pays for itself many times over in money saved.

• ACCURATE

Operating on the principle of the seismograph, the Globe Geophone is without question the most sensitive and reliable instrument for detecting underground leaks.

Complete Geophone outfit consists of connecting tubes, two Geophone discs, headpiece, and heavy leather-covered carrying case with shoulder strap..... **$85**

Pipe Phone.....$3.70
(Aquaphone)

Globe Phone Mfg. Corp. Reading, Mass., USA; Dept. Y

Manufacturers of Geophones Since 1918

BURKE-BUILT PLAYGROUND EQUIPMENT

*PATENTED BURKE DESIGN

for WELL PLANNED PLAY AREAS

***BURKE-BUILT CLIMB-A-ROUND**

It is sturdy and strong . . . all surfaces are smooth . . . need not be set in concrete. *Children prefer it.*

The Burke-Built line includes: Climb-A-Rounds, Swings, Slides, See-Saws, Merry-Go-Rounds, Turning Bars, Horizontal Ladders and other playground apparatus.

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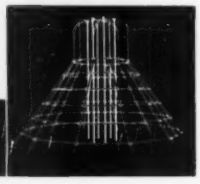
City playgrounds all over the country have found Burke-Built Equipment sturdy and strong over a period of many years.

In your plans for replacements or for new installations make Burke-Built playground equipment your first choice.

We will be glad to help you with your planning.



THE J. E. BURKE CO.
FOND DU LAC, WIS.

Newly Improved OK CHAMPION POWER SEWER CLEANER

DON'T LOSE Sewer Capacity

Clear your sewer lines regularly. Keep up full carrying capacity and you save money—in lower maintenance cost and avoiding costly backwash. Order OK Champion Power Sewer Cleaner equipment and your men remove roots, dirt and other obstructions from any storm or sanitary sewer in ONE operation. All men work above street level.

OK Champion cleaners are regularly clearing sewers all over the world. New improvements make them better than ever. Send for literature.

CHAMPION CORPORATION
Hammond, Indiana

GET FULL FACTS NOW!

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Please send information on how the Improved OK Champion Power Sewer Cleaner cuts sewer cleaning costs.

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✓LOW POWER COSTS
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Sustained Quietness and Efficiency...

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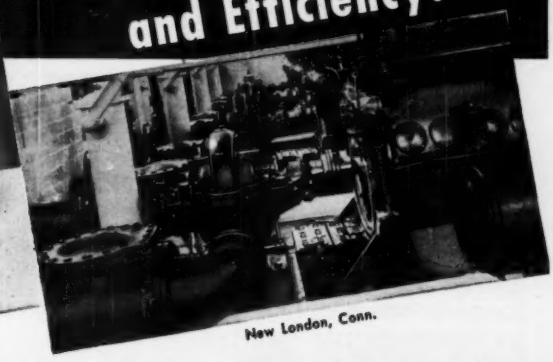

New London, Conn.

That's Why So Many Municipal Water Plants Specify MORRIS CENTRIFUGAL PUMPS

Wilmington, N. C.

Rocky Mount, N. C.

Rugged in construction . . . with design stresses low for smooth, trouble-free operation . . . MORRIS CENTRIFUGAL PUMPS run quietly and uninterruptedly over long periods of continuous operation. Sustained high efficiency—the result of correctly related impeller and casing designs plus Morris' quality construction—keeps power consumption down. Service and repair costs per million gallons are held to a few cents. Daily experience over a period of years confirms the wisdom of selecting MORRIS equipment.

Consult our engineers now regarding your particular needs. There's a MORRIS pump for every job, and more than three-quarters of a century of pump-building "know how" behind every MORRIS pump.

MORRIS MACHINE WORKS
BALDWINSVILLE, N. Y.
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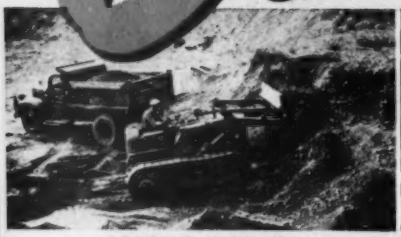
MORRIS CENTRIFUGAL PUMPS

Cut Costs

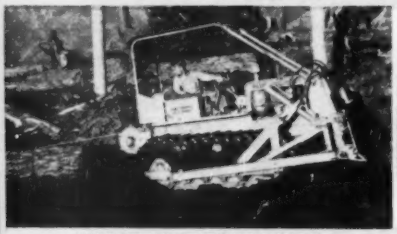
Not tied down to specialized duty —



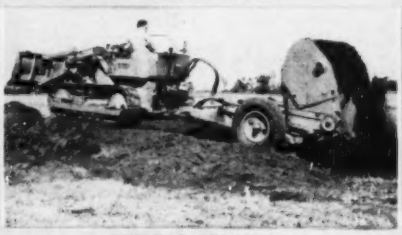
LOADING FROM PIT

LOADING SNOW

PLOWING SNOW



WINCH AND HOIST WORK



PULLING SCRAPERS

CLEARING

FEEDING ASPHALT AND CRUSHER PLANTS

BUILDING SANITARY FILLS

A Great Tractor WITH A GREAT ALLIED LINE

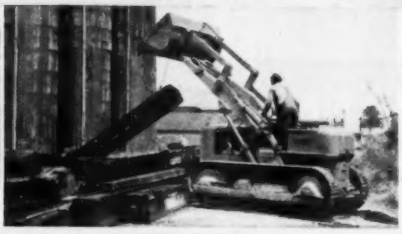
Available with fully matched Baker, Gar Wood and Carco bulldozers . . . Drott Skid-Loader . . . Baker snowplow . . . Gar Wood scraper . . . Carco winch . . . Tractomotive Tracto-Shovel with interchangeable attachments—1 cu. yd. standard bucket, ¾ cu. yd. narrow bucket, 2 cu. yd. light materials bucket, 1 cu. yd. rock bucket, teeth for all buckets, heavy-duty bulldozer blades (narrow and wide) and V-type snowplow.

CLEANING BEACHES

HANDLING COAL

GRADING HOMESITES

FLOOD CONTROL



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WITH THE VERSATILE ALLIS-CHALMERS HD-5

– Yet gives special performance on every job

Completely New IN DESIGN

New Performance . . .
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New SimpliRail Servicing
Weighs 11,250 lbs.
Provides 40.26 drawbar hp., 50.25 on belt
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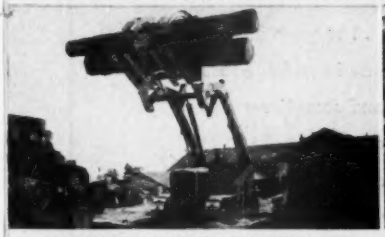
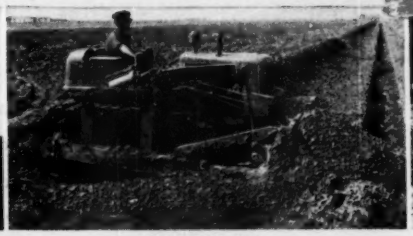
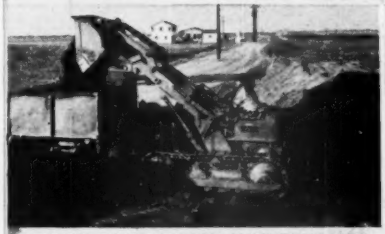


HANDLING TIMBER, LUMBER, ETC.

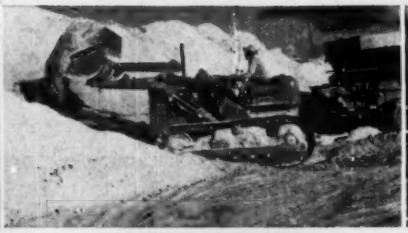


BACKFILLING

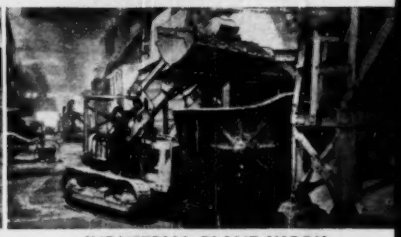
GRADING PARKING LOTS



ROAD AND STREET MAINTENANCE



MATERIAL HANDLING



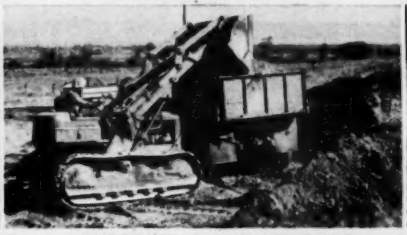
INDUSTRIAL PLANT WORK

CRANE WORK

LOADING ROCK

TUNNEL AND SUBWAY EXCAVATION

DIGGING BASEMENTS, CULVERTS, ETC.



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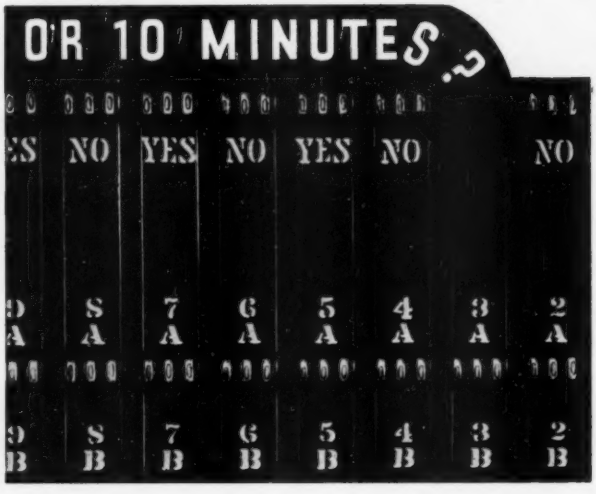
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

ELECTION RETURNS...

. . . Is your Community one in which hours and sometimes even days of inaccurate and laboriously slow "hand-counting" must be endured before the final results are known—

. . . Or is it one of the 4,500 Cities and Towns that use AUTOMATIC VOTING MACHINES and have the final tabulation available a few minutes after the polls close?



For information concerning the many other advantages of the AUTOMATIC VOTING MACHINE . . . Write—

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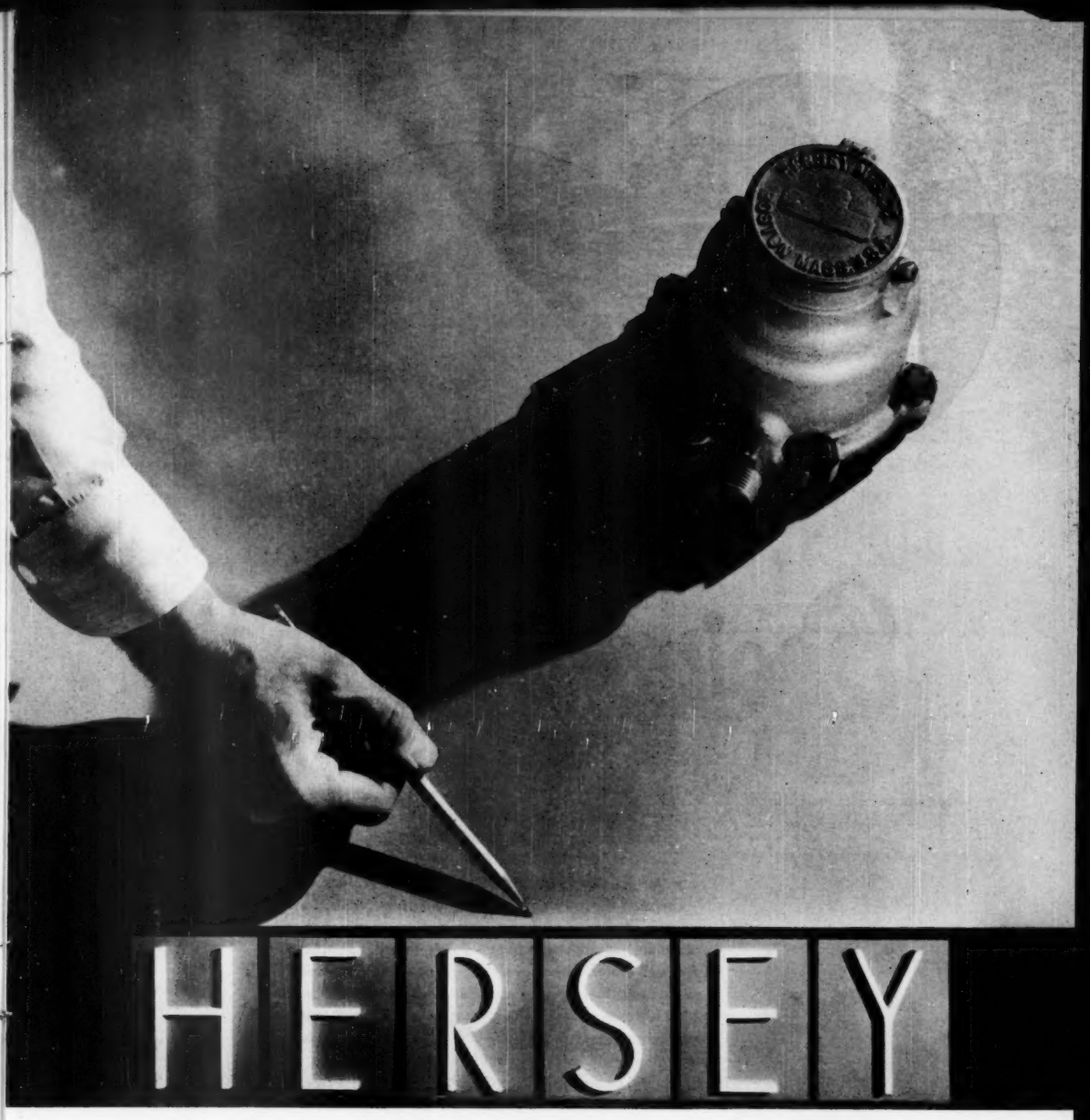
JAMESTOWN, NEW YORK

"Builders of Voting Machines Since 1898"



This six-letter word stamped on a Water Meter signifies that you get the best in design, highest percentage of accuracy in registration and the lowest in maintenance cost. You can't go wrong when you specify

HERSEY WATER METERS

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

BRANCH OFFICES: NEW YORK — PORTLAND, ORE. — PHILADELPHIA — ATLANTA — DALLAS — CHICAGO
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Seeing Double?

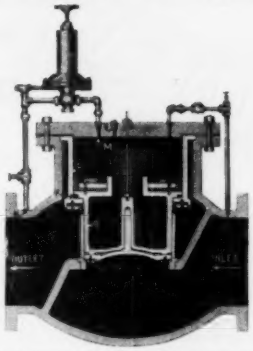
Here are two pictures of the same town. What a difference a few years and abundant soft water can make! ¶ Industry was at a standstill and population was declining, until municipal authorities decided to install a water conditioning system. ¶ Soon factories began choosing this town as the site for their new plants, for soft water means lower-cost, speeded-up production. It's essential to modern industry! Every family benefited too, for soft water makes every home cleaning job easier . . . saves soap, fuel, and repair bills. ¶ That's why soft water makes a town grow! ¶ Does your town enjoy soft water's many advantages? If not, Permutit can provide modern, pure water that perfectly suits your needs. Write to The Permutit Company, Dept. A-5, 330 West 42nd Street, New York 18, N. Y., or to the Permutit Company of Canada, Limited, Montreal.

Permutit®

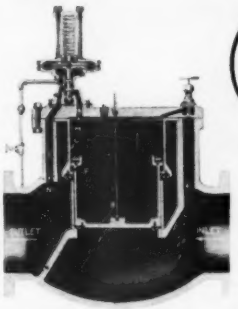
WATER CONDITIONING HEADQUARTERS FOR OVER 35 YEARS

G-A Water Pressure Reducing Valve maintains constant downstream pressure against higher upstream head.

G-A Water Pressure Reducing and Relief Valve maintains downstream pressure as adjustment is made against any higher upstream head.



G-A Water Pressure Reducing and Check Valve has "stop piston" to prevent downstream pressure from returning back through the valve.



G-A Single Acting Semi-Throttling Altitude Valve maintains desired water level to prevent overflow.

GA

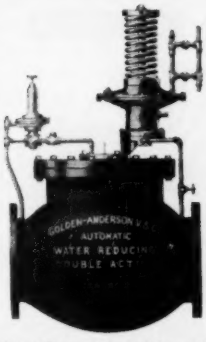
Golden-Anderson

designers and builders

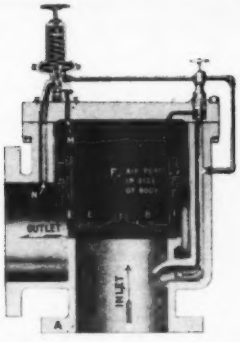
WATER PRESSURE

Valves

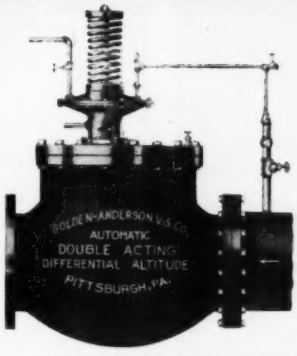
for every service installation



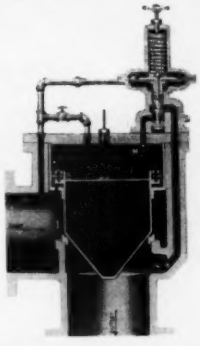
G-A Water Pressure Reducing and Double Acting Water Level Control Valve is ideal where low and high pressure zones are maintained.



G-A Water Pressure Relief Valve, angle pattern, automatically opens to maintain desired line pressure.



G-A Double Acting Differential Altitude Valve assures unfailing water level control with 3" to 12" variation.



G-A Water Pressure Relief Valve is furnished in either standard piston type or in needle piston type as shown here.

Let our Engineers Help Solve Your Valve Problems with a specially designed valve or one of 1500 types and sizes of standard Golden-Anderson Valves.

GA

GOLDEN-ANDERSON *Valve* SPECIALTY CO.

Keenan Building, Pittsburgh 22, Pa.

LIFE AND PROPERTY PROTECTION VALVES SINCE 1905

IDEAL heavy duty POWER MOWERS

for Economical Lawn Care

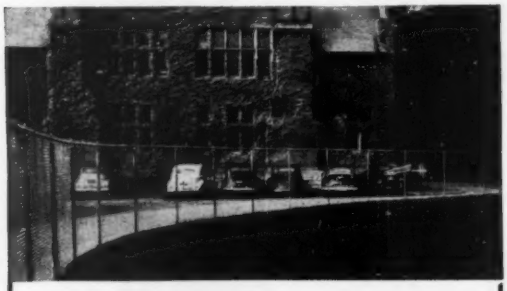
The name IDEAL on power mowers carries a long-time reputation for insuring true economy in lawn care. From largest to smallest models, IDEAL Power Lawn Mowers have an efficiency of design and reliability of construction that truly saves man hours on the job. Added to this are the generously rugged parts and high quality materials, which continuously guard against wasteful breakdowns and repairs.

The IDEAL **New Victor** is available in 24" and 28" widths of cut. The IDEAL **Caretaker,** with 32" center cutter, is remarkably handy and easy to control. Reverse mechanism for backing out of tight corners. Husky 5 hp engine. Operator can ride detachable sulky for real speed. Where space permits, two additional trailer cutting units may be hooked on, giving full 68" swath. For information, see your IDEAL dealer, or write direct.

Take off easily removed cutting unit; put on sweeper unit and Caretaker quickly clears grounds of leaves, trash, etc. Also other specialized sweepers for indoor use.

48" Snow Plow attachment keeps walks and drives open all winter.

IDEAL **POWER LAWN MOWER CO.**
Dept. 541, Springfield, Mass.



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Provides Permanent Property Protection

Used in protection of power plants, schools, reservoirs, hospitals, disposal plants, and similar types of property, a Realock® Fence provides years of trouble-free service. Made of steel wire, heavily galvanized, it is tamper-proof, weather-resistant, low in cost—furnished with or without barbed wire at top.

Let us submit estimates for fence material ready for erection or covering complete installation by trained crews. Write to our nearest office.

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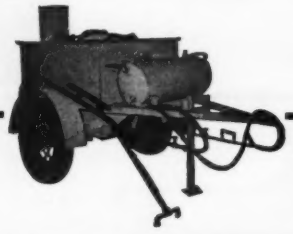
Realock Fence

WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORP.
THE CALIFORNIA WIRE CLOTH CORP.
BRANCHES & DISTRIBUTORS IN KEY CITIES EVERYWHERE



White Heating Kettles Have Fire-Proof Tops

Cut-back and other highly inflammable material used in street and road repairs can be heated with full safety in White kettles. FIRE-PROOF top reduces fire hazard.

White asphalt and tar kettles are extensively used. They are highly satisfactory and give long life.

Furnished as plain kettles, or with hand or engine-driven spray pumps for patching all kinds of pavement. Can be supplied with thermometer, barrel hoist, warming hood. All oil burning. Mounted on semi-elliptic springs and pneumatic tires. 65, 110, 165, 220, 300 gallon capacities. Detachable fuel tanks.

Model F-10 is oil jacketed for safely heating elastic joint and crack filler.

Write for catalog

Elkhart **White Mfg. Co.** Indiana

John BEAN Shade Tree Equipment

Rotomist (above) is readily mounted on light truck. It gives you better shade tree protection; saves material; cuts manpower; makes light work of what were formerly tough jobs handling spray guns.

Effective Insect Pest Control

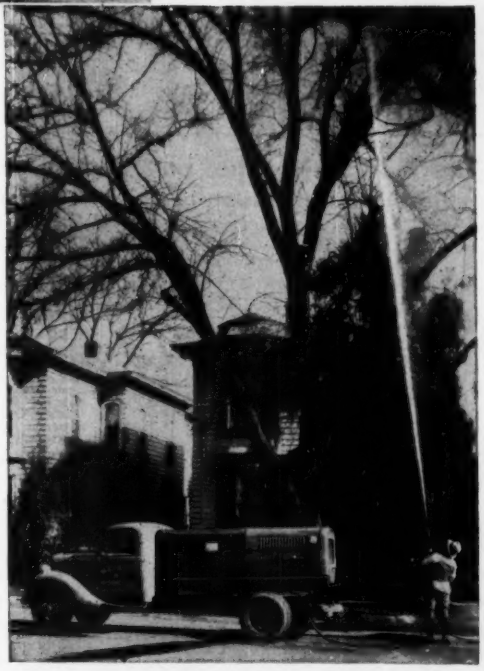
John Bean's complete line of specialized sprayers for shade tree work and for control of flies, mosquitoes and insect pests has met nation-wide approval. Whether your need is to make recreation areas pest-free, increase sanitary control, operate a community fly-control program, you'll find that a John Bean sprayer will do the job better and faster. Write for free Pest Control information.

Built to Fit All Your Needs

If you want fast operation, with thorough coverage and fatigue-free, one-man control, then the Bean *Rotomist* is the answer. The new 1949 *Rotomist* has many new design refinements and features that more than ever make *Rotomist* the best way to apply concentrates, dry dust or wet dust. Its aerodynamic design releases micron-sized spray particles that give complete coverage with a minimum of drift. It also eliminates deposit of spray material on cars or homes.

The operator has full visibility for efficient, easy operation with responsive hydraulic controls. Write for free Rotomist Catalog.

Whether your needs call for a conventional high pressure sprayer or a Rotomist concentrate applicator, you'll save time, money, material and maintenance cost with John Bean equipment.



The John Bean line includes models with outputs to 60 gallons per minute at pressures to 800 lbs. And, for hard-to-reach areas, back yards, etc., there are portable John Bean sprayers and concentrate applicators. Write for free, complete information on John Bean specialized shade tree and pest control equipment.

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JOHN BEAN LANSING 4, MICHIGAN
DIVISION OF FOOD MACHINERY AND CHEMICAL CORPORATION

WHY DO RAILROADS INSIST ON THE BEST?

Any watch will keep time, for a while, but only the finest watch has that extra margin of durable precision which means dependability in the long run. Railroads can't operate without this dependability nor can a meter parking system be operated, successfully, without enduringly dependable meters. The KARPARK "Superior" with its double strong standard, heavy steel housing, bronze hairspring, machine cut parts, superfine mainspring, and fool proof automatic operation, has all the quality "extras" that are needed for long-lasting, accurate, trouble-free performance in all conditions of weather. Know why the KARPARK "Superior" means true economy in the long run and satisfaction all around. Write, today.

Responsible Distributors are invited to ask for full particulars

KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK CO.

KARPARK

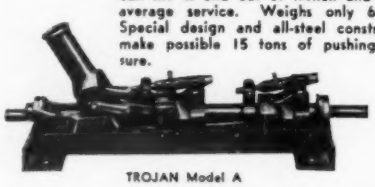
Automatics

THE KARPARK CORPORATION, CINCINNATI 6, OHIO

The TROJAN pipe puller and pusher — Cuts Costs! Saves Time!

• Simplifies installation or renewing water and gas service lines under pavement

MODEL A—for ½" to 1" pipe. One man can lift in and out of trench and install average service. Weighs only 65 lbs. Special design and all-steel construction make possible 15 tons of pushing pressure.

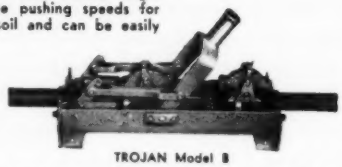


TROJAN Model A

DOUBLE ACTION AND CONTINUOUS OPERATION

No re-setting of grip required. Push pipe is made of double extra heavy steel pipe with inside couplings for butt joint. Pilots and Special Couplings will handle variety of jobs.

MODEL B—will push up to 2" pipe without additional dogs, clamps or wedges. Heavy duty, all-steel construction, weighs 140 lbs. Has three pushing speeds for different types of soil and can be easily reversed.



TROJAN Model B

The TROJAN Manufacturing Co., 441 East Water St., Troy, Ohio

New . . . Permanent

HOLD EVERYTHING!
SEE THE NEWEST AND BEST

LAKE SHORE

PERMANENT ALUMINUM STREET SIGNS

LOW COST **NO MAINTENANCE**

VISIBLE DAY & NIGHT

Wire or Write Today for Complete Information

Catalog #20-S Illustrated

LAKE SHORE MARKERS

Div. of Lake Shore Pattern Works

654 W. 19th Street, Erie, Pa.

IT TAKES A BAKER FOR THE MAN SIZE JOBS

It is significant that today on the BIG TOUGH JOBS you'll find Baker Bulldozers and the A-C HD-19 in the key spots . . . where the going is toughest, where big yardages must be moved fast and at lowest cost.

And it's not the color of the paint that makes Baker the favorite — it's the reputation they've been building up among experienced users — for out-dozing anything in the field — for more yardage per pass — for easier operation — for rugged dependability.

These are facts that can be proved in the field, on your job. If you are still using your regular bulldozers, it will pay you to investigate this great, new Baker. See your friendly Baker Allis-Chalmers dealer today.

BAKER MFG. CO.
Springfield, Illinois

Portable HUSSEY SAFE SEATING Permanent

Need Safe Seating QUICK?

Then investigate Hussey (patented) Portable Bleachers. Six, ten and fifteen tier stands are carried in stock for quick delivery. Because of their exclusive, patented construction, Hussey steel portable bleachers are safe, quick and easy to erect and take down and take up less storage space. Additional sections can be added as needed and they are low in cost.

Hussey also specializes in portable and permanent grandstands to meet all of your seating requirements.

The knowledge and experience of our trained seating engineers is available to you without cost or obligation.

Write today for FREE literature and name of nearest Hussey representative.

HUSSEY MFG. CO., INC.

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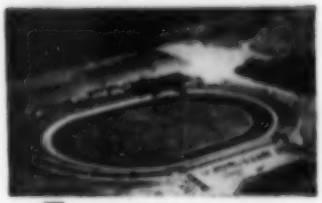
Also ask for catalog of "Laughing Loon" diving boards, swimming floats, etc.

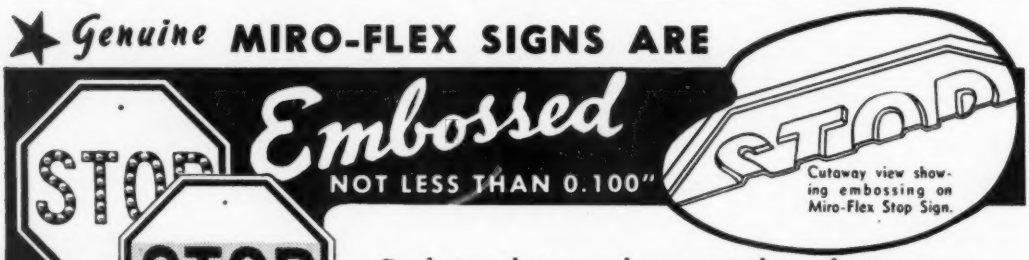
TYPICAL HUSSEY INSTALLATIONS



PORTABLE BLEACHERS
Norwood Arena - Norwood, Mass. A Hussey Portable Bleacher installation with a seating capacity of 13,080.

PORTABLE GRANDSTAND
Another Hussey installation at Danvers, Mass. Affords permanent stand advantages, yet may be moved quickly, easily and economically.

★ *Genuine* **MIRO-FLEX SIGNS ARE**



Good signs that meet the most rigid specifications are a real investment in traffic safety. Choose from Miro-Flex, America's finest complete sign line. Miro-Flex signs are deeply embossed on galvanized, bonderized steel. Finished in baked enamels. Signs in the Miro-Flex line also available with glass or Lucite buttons, or beaded reflectorization. Miro-Flex signs are sturdy, smart looking and definitely dependable . . . easily seen, easily read. For details, write for catalog and quotations on standard or special orders.

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For fast addressing

Mimeograph 33 addresses onto pages of gummed, perforated labels. Guide lines on stencil sheet position the addresses accurately.

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These stencil sheets have guide lines for two- or three-column duplicated copies. Sharpen the appearance and quality.

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These stencil sheets have guide lines and complete instructions for producing smart looking 4-page folders quickly and economically.

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That's an important job. If it's done swiftly, smoothly, and economically, it will be reflected in more efficient administration. And it's a job in which A. B. Dick mimeographs are unequalled.

Fast production in handling a wide range of paper stocks and sizes is an easy matter with the complete line of A. B. Dick mimeographs. For use with all makes of suitable stencil duplicating products. Get complete details from your nearby A. B. Dick distributor, or send in the coupon below.

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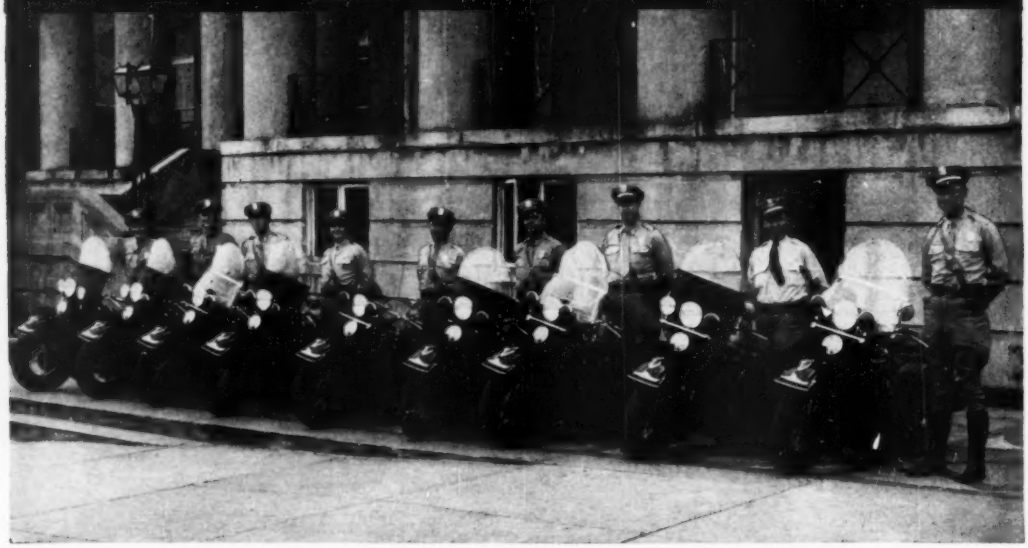
In Macon, Georgia . . .

HARLEY-DAVIDSONS *Exclusively!*



More Motorcycles — is Macon's Answer to Increase in Traffic Problems!

WITH new motorcycles, new uniforms, and new methods, the traffic department of Macon, Georgia, inaugurated a new era in traffic control. Under the capable leadership of Chief B. T. Watkins, the program is producing results. Citizens and visitors alike comment favorably on the improved efficiency and appearance of the traffic officers. Playing a vital part in this program are the new Harley-Davidsons which are used exclusively by Macon. As in hundreds of other cities throughout the country, these motorcycles have made it possible to utilize manpower more effectively, reach trouble spots more quickly and enforce traffic regulations more effectively.

The menace of mounting injuries and deaths is attracting more public attention everywhere, arousing more demands that police departments install new methods and equipment. Why not help increase the effectiveness of your traffic department by equipping it with efficiency-proved Harley-Davidson Police Motorcycles, Servi-cars and Sidecars? Your dealer will be glad to give you complete information about the all-around utility and superiority of Harley-Davidsons for police work and traffic control.

HARLEY-DAVIDSON MOTOR COMPANY. Milwaukee 1, Wisconsin

HARLEY-DAVIDSON

MOTORCYCLES POLICE BETTER TRAFFIC CONTROL **SERVI-CARS**

PHILCO

FM Communications Systems

EXCEL IN FEATURES THAT COUNT

Mobile Transmitting and Receiving Unit. Convenient desk-drawer type for quicker, easier servicing.

Remote Control Unit *(above left).* Operates station transmitter and receiver from remote location. Only single pair of telephone lines required to connect unit with transmitter.

UNEQUALLED AUDIO QUALITY—Philco exclusive advanced FM phase modulator and detector assure clearest, crispest speech intelligibility in the industry . . . crystal clear reproduction even at weak signal level.

FULL COVERAGE—Philco 30-50 and 152-162 MC units deliver *full rated power* to give maximum coverage.

UTMOST FLEXIBILITY of INSTALLATION—Only Philco mobile units can be mounted side by side, end to end or stacked drawer fashion. Fixed station installations provide floor, desk and wall mounting for medium power; cabinet mounting for both high and medium power. All with simplified control and cable connections.

MINIMUM MAINTENANCE—Philco FM Systems are engineered for freedom from service problems . . . heavy duty components assure long life . . . transmitters and receivers operate with standard tubes . . . parts are readily accessible . . . interchangeable drawer type mobile chassis do away with time out for servicing.

WRITE TODAY FOR THE COMPLETE STORY OF THE MOST MODERN FM COMMUNICATIONS SYSTEMS IN THE INDUSTRY

Industrial Division, Dept. BA5,
Philco Corporation, Philadelphia 34, Pa.

Please send latest information on Philco FM Communications Systems.

NAME..... **TITLE**.....

ADDRESS.....

CITY..... **STATE**.....

Metcalf

TRADE MARK REG U S PAT OF

UNIFORM FABRICS

FIREMEN

POLICE

Standard fabrics for over eighty years

Specify 386 and other standard numbers. Sample brochure upon request

METCALF BROS. & CO. 45 EAST 17th STREET, NEW YORK CITY

4 days' work now done in 3

JAEGER MODEL 125 *obsoletes the 105.*

Runs 2 heavy or 3 medium breakers at full 90 lbs. pressure instead of 70, increases production 30% to 40% with the same men and tools.

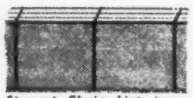
All new Jaeger sizes—75 to 600 ft.—give comparable work increases.

See your Jaeger distributor or ask for Catalog JC-8

The JAEGER MACHINE CO.
Columbus 16, Ohio

Sales, Rentals and Service in 130 Cities of United States and Canada

PUMPS • MIXERS • HOISTS
PAVING EQUIPMENT



Stewart Chain Link Wire Fence is available in several heights, weights and styles to meet the degree of protection desired.

● **Stewart Chain Link Wire and Plain or Ornamental Iron Fences and Entrance Gates** are made in a sufficiently wide range to adequately cover the fencing requirements of all classes of public property.

DON'T OVERLOOK STEWART

If your plans call for Iron or Wire fencing

Stewart Plain or Ornamental Iron Fence is made in a wide

variety of designs for all classes of public property.

Stewart All Steel Settee—Durable, attractive—in 4', 5' and 6' lengths.

In addition to fence, Stewart produces many other iron, wire and bronze products for the protection and beautification of public property. Catalog sent on request: when writing, mention products in which you are interested.

Stewart IRON and WIRE FENCES

THE STEWART IRON WORKS CO., INC.
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CINCINNATI 1, O.
Experts in Metal Fabrications since 1886

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LIGHT WEIGHT ONE-MAN

One man can produce to the limit with this Disston One-Man Chain Saw for light felling, bucking, limbing and general needs. Light, easy and safe to handle. Starts sure. Powered to do tough work fast. Cuts at any angle, without adjustment. Proved features include instant, handy controls and automatic chain lubrication. 18", 24" and 30" Guide Rails are quickly interchangeable.

A few moments to saw this off

LIGHT WEIGHT TWO-MAN

Here's the Two-Man light weight saw everyone has been waiting for. Combines convenient two-man handling with minimum exertion in cutting bigger trees. New type Chisel Chain (with 30" Rail) makes large felling easy, even on hillsides. Remove handle and you have an efficient One-Man bucking bar. Available with 24" as well as 30" Guide Rail.

Get this done in a minute or less

EXTRA-DUTY TWO-MAN

The saw that handles the big ones right in stride. Full 12 h.p. Toughest ripping and cross-cutting are easy with new self-feeding Chisel Chain—automatically lubricated to save wear. 2' to 7' Guide Rails all quickly interchangeable anywhere. Bucking bar attachment available.

Handles big work easily

DISSTON CHAIN SAWS

with Mercury Gasoline Engines

•

for light work—
big cutting—
every purpose

PRICES
$399.50 up

BOW SAW ENDS PINCHING • SAVES TIME AND TROUBLE

"This is it!" for quick, easy bucking wherever trees fall, on any terrain. The sturdy, slim blade won't pinch in the cut. Saves stops and starts; saves time and money. This 15" Bow Saw with Disston One-Man Chain Saw power is a thrifty team. Bow Saw also available as an attachment, interchangeable with 18", 24" and 30" Straight Rails.

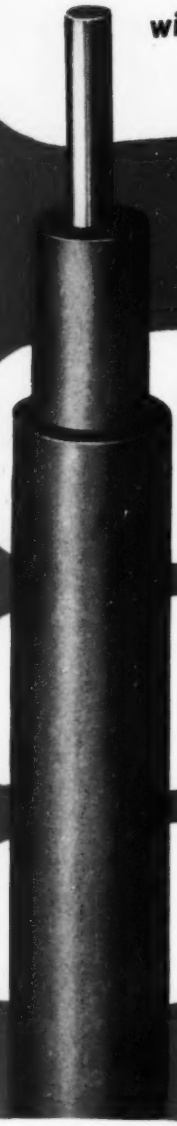
WHEN YOU BUY A DISSTON PRODUCT YOU BUY DISSTON STEEL SKILL and SERVICE

GET A DEMONSTRATION FROM YOUR NEAREST DISSTON DEALER AND GET A BRAND NEW IDEA OF WOOD-CUTTING ECONOMY

HENRY DISSTON & SONS, INC.
565 TACONY, PHILADELPHIA 35, PA., U. S. A.
Canadian Factory: 2-20 Fraser Ave., Toronto 3, Ont.

1 SIMPLE DESIGN with 9 IMPORTANT ADVANTAGES meets 10 CABLE REQUIREMENTS

HAZARD'S VERSATILE HAZASHEATH



CABLE DESIGN

■ Hazaloy-coated conductors prevent corrosion.

■ Hazard Watertite Submarine Insulation is a rich, rubber compound, formulated especially by Hazard to assure superior service in moist locations. Strong, resilient and moisture-resistant, it has proved its durability and dependability for over 20 years under the toughest operating conditions.

■ Hazaprene Sheath is applied in a single layer and uniformly vulcanized to provide a tough, resilient, long-lived protective covering. Made with neoprene, Hazaprene successfully withstands sunlight, weather, moisture, acids, chemicals, etc.

ADVANTAGES

- No ducts required when buried
- Light in weight
- Flexible
- Economical
- Wear-resistant
- Flame-resistant
- Easy to install
- Simple to splice and terminate
- No magnetic sheath losses

APPLICATIONS

- Series street lighting
- Airport lighting
- Industrial power lines
- Underground distribution
- Building entrances
- Rural wiring
- Highway lighting
- Municipal signal wiring
- Bridge wiring
- Athletic field lighting

Whether buried direct, run in ducts, or strung overhead, Hazasheath has all the necessary protection built in so that safe, trouble-free, long-lived circuits are assured. For all the facts about this outstanding Hazard cable, write Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

HAZARD

7477

insulated wires and cables for every electrical use

★★★★ Barber-Greene ★★★★

B-G COST SAVING BULLETIN No. 4902

CONTRACTOR LOADS 80,000 YARDS PER YEAR WITH ONE BUCKET LOADER

Reports Loading Cost of 1/2 Cent per Yard

Ashland, Mass. — Backed by years of experience with all types of truck-loading equipment, and close cost accounting on each type, the Ashland Sand and Gravel Company, Inc. reports that the record for lowest cost and fastest truck loading goes to its B-G 545-A Bucket Loader.

In loading approximately 80,000 yards of material yearly—sand, stone, loam, etc., the B-G Loader brought costs down to one-half cent per yard, including depreciation and maintenance as well as operating expense. This low cost also includes the time involved in moving from stock pile to stock pile—and would of course be even lower if the Loader worked from only one stock pile. In reporting these facts, A. N. Leverone, the company's president, further adds, "In our opinion the principle of the continuous flow of material as incorporated into your Bucket Loader guarantees high capacity loading at a steady uniform rate with a minimum of maintenance and operating expense."

Broad Range of Users Cuts Costs with Heavy-Duty B-G Loaders

Modern Controls Aid Operators **Conveniently banked controls help make any man an expert operator quickly. Hydraulic boom hoist is power operated. Hydraulic brakes on main drive wheels.**

Boom Cradles **For fast transport, boom quickly lowers to horizontal position to give low clearance. Two travel speeds—turning diameter is 31 feet.**

Builders, general contractors, state and highway departments, material dealers, aggregate producers, black dirt contractors—all report new low costs in truck loading with the B-G 545-A Loader. This heavy-duty, 3 cubic yards per minute Barber-Greene provides high capacity loading of all free-flowing materials such as stone, gravel, sand, cinders, coal, coke, top soil, fertilizer, etc. Mounted on tractor-type pneumatic tires with automotive steering, the 545-A combines mobility and maneuverability with compactness. It gets around quickly in cramped areas and can be readied in a few minutes for moving from one location to another. With its Spiral Feed and welded steel buckets, the 545-A loads clean—has the ability to dig into bank top soil or shoulder. Completely modern in design the 545-A has centralized operating controls, floating boom, automatic overload release, self-locking adjustable swivel spout, heavy-duty battery, electric starter and other advanced features.

Loader Pays on 4,000 Tons Per Year

"Gives Us More Trucks," says Firm Head

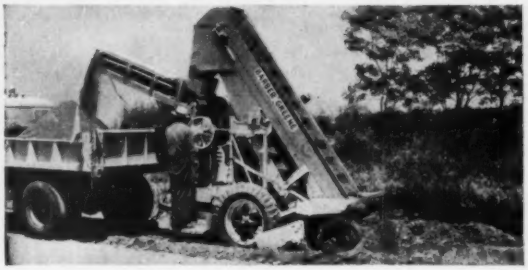
Lake Forest, Ill. — Two years of loading aggregate with a B-G Bucket Loader persuaded the G. L. Blanchard Company to purchase a duplicate machine for loading their stoker coal—although their yearly volume is only 4,000 tons. Now in its second year of service, the additional B-G Loader has proved to be an excellent investment.

E. G. Lindenmeyer, president, reports, "the savings in the loading operation itself are only part of the story. Our real saving is in truck time. During our rush season the machine is invaluable and, in effect, **it gives us more trucks.**"

So far, the G. L. Blanchard Company has handled 39,000 tons of lime, stones, sand and gravel with their first Barber-Greene, and to date their repairs for both machines have totaled zero.

PRTD. IN U. S. A.—220,000 M-4-49-AM

USERS REPORT BROADEST RANGE OF JOBS HANDLED BY VERSATILE BUCKET LOADERS



A821-B

For low clearance and long reach the B-G 522 Loader is equipped with swivel discharge conveyor which has a swing of 140°. Ready for truck towing at 20 m.p.h. with no adjustments. Loader easily converted to Snow Loader.

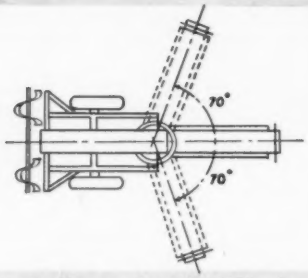
BG4128-B

The 522 is also available with high boom and swivel spout. If low clearance is not necessary, this model is often chosen as it is lower in initial cost and provides the same capacity, portability and other performance features. The high boom type can be equipped with vibrating screen for scalping oversize.

SAN FRANCISCO FINDS MULTIPLE USES FOR BUCKET LOADER . . . VARIETY OF COST-REDUCING PERFORMANCES REPORTED

San Francisco, Cal.—When the Park Commission here bought an 82-A Loader with gravity screen, it was for one purpose: namely, beach cleaning. This was the job they had in mind, for the 82-A has gained quite a reputation for removing glass, nails, and other dangerous rubbish from city beaches. It wasn't long, however, before the broader usefulness of the 82-A was discovered. Now it's used for clearing away sand accumulations in the dividing strips on the highway, stripping loam, excavating for park paths, and regular truck loading, along with its beach-cleaning duties.

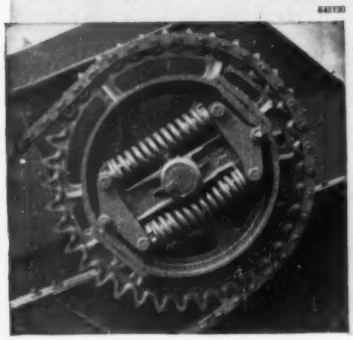
Milwaukee, Wis.—Elmer Engler Company, landscape gardener here, has been using Bucket Loaders for stripping top soil for the past ten years. Their latest Loader, an 82-A, was delivered in 1947, and since then has loaded and screened thousands of yards of clean top soil—300 to 400 yards per day—stripping from field or stock pile. Even in stripping operations they report a 5-yard truck is loaded in 4 minutes, and the high discharge of the 82-A facilitates stock-piling without the use of any additional equipment.



The above diagram shows the 140° swing of the swivel discharge conveyor 522.

Automatic Overload Release Saves Time and Maintenance—All B-G Loaders are equipped with an automatic overload release mounted on the bucket loader head shaft. It automatically trips on overload and automatically resets itself.

A817D



Hollywood, Cal.—To provide safety for participants in the "Sport of Kings" the Hollywood Turf Club and other Coast tracks use an 82-A Loader with special screen attachment to keep the turf free of pebbles which might cause injury to horses.

B-G LOADERS GET THERE FAST—MANEUVER EASILY

The Model 522 B-G Loader combines convenience, capacity and adaptability with a low initial investment and extremely low operating cost. It handles the broadest range of free-flowing bulk materials—as much as 1½ cubic yards per minute—and, as such, is a widely used machine among highway maintenance departments, contractors and municipalities. It is frequently used for leveling, landscaping and other similar operations.

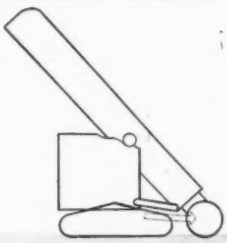
The Swivel Conveyor Model 522 is designed to be low enough to avoid tree branches in street or road work—and to work inside warehouses or other locations where obstructions would ordinarily interfere. On its pneumatic tires, the 522 is towed behind trucks at normal speeds.

20 m. p. h. TOWING 140XTR

B-G FLOATING BOOM ADJUSTS ITSELF TO GRADES AUTOMATICALLY

Assures Accurate Cleanup

The B-G Floating Boom provides for scraper thrusts to be exerted through push-arms direct from the crawlers. The boom is supported on rollers which allow it to automatically adjust itself to irregularities in the grade. This, combined with the follow-up scraper, makes possible a nice cleanup and digging to grade with a high degree of accuracy. Preliminary grades may easily be obtained—in the case of highway operations, for instance.



Floating boom design identifies all Barber-Greene's.

A Feature of All B-G Loaders

The patented Floating Boom is only one of many features in common with all B-G Loaders. Others include the automatic overload release, the B-G Synchronized Spiral Feed, truck type transmissions, simplified controls, etc.

LOADER HELPS DRY FERTILIZER

Morocco, French Africa—A large phosphate mine here uses a B-G 522 in an interesting aerating operation. Traveling down long windrows of phosphate, the 522 elevates the material and, in depositing it in neat, easily reclaimed piles, hastens the drying process.

125,000 TONS LOADED IN TWO YEARS TOTAL REPAIRS LESS THAN $75.00

847452

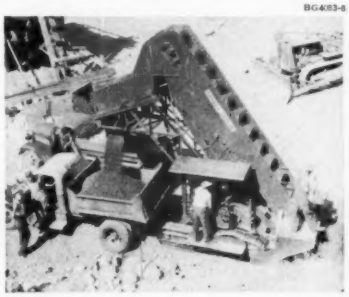
Aggregate Firm Tells Record of B-G Loader

Milwaukee, Wis.—H. F. Reinkel of the Lake Shore Stone Company claims he has the best stock pile loading unit on the market today in his B-G 82-A Loader—and backs his claim with impressive figures:

In the past two years, this Loader has handled 125,000 tons of sand—yet repair costs have been less than $75.00. In an 8-hour day, up to 710 tons are loaded by this crawler-mounted Barber-Greene. Operating the year around, the 82-A successfully breaks through frozen sand, and with its Spiral Feed, pulverizes it to make possible high capacity loading under rigorous conditions.

Mr. Reinkel sums up with the information that with his 82-A, he can exceed the loading capacity of much costlier and less versatile equipment.

BG4083-6



Loaders Pay Off at Bottom of River

Reno, Nev.—Down in the dry river bottoms near here, three B-G Loaders are efficiently at work reclaiming, screening and loading aggregates for the State of Nevada. Equipped with double-deck vibrating screens, the Loaders are able to segregate aggregates into the sizes required—making reclaiming, loading and screening a simple, simultaneous operation. Crawler-mounted, the 82-A's have the stability required for working in locations such as this.

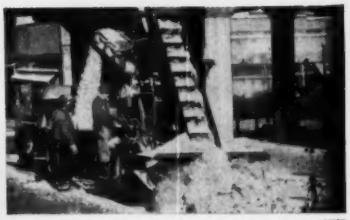
Crawler Mounting Often a Must

The full crawler mounting of the 82-A helps make possible its record performance wherever soft or unsure footing is encountered and/or where maximum traction is desirable. This versatile, heavy-duty loader handles up to 3 cubic yards per minute, is available with a wide variety of accessories such as gravity screens, bar screens, vibrating screens, etc. It is widely used as a component of the Barber-Greene Travel Plant where it tows the Mixer and loads it from windrowed material.

ROAD CONTRACTOR AVERAGES 1,000 TONS PER LOADER, PER DAY

Mechanicville, N. Y.—There's a 93,000 ton hole in the ground near here where two 82-A Loaders excavated, screened and loaded bank run gravel for a State road project.

Collins Brothers, Road Contractors, put the Barber-Greene's to work after turning down other types of excavating and loading equipment as too expensive and too slow. The gravel deposit was found in a flat meadow and after scrapers had removed the overburden, the 82-A's took over the job on their own. They each excavated and loaded up to 1,000 tons per day, leaving a 25-foot hole covering many acres—plus a remarkable record for getting a big job done at minimum cost per ton.



44695

Mechanicville, N. Y.—Regular summer service as a Bucket Loader, plus additional value in winter as a Snow Loader, wasn't enough for this 522. Commissioner of Public Works now reports it's used to help keep the 21 miles of city streets free of leaves during the fall.

CITIES CONVERT BUCKET LOADERS TO SNOW LOADERS FOR YEAR-ROUND SERVICE

Removes 6-inch Fall in 18 Hours

Hagerstown, Md.—The first time this city's newly acquired 522 Snow Loader was put to work on snow removal, it removed 6 inches of snow from 3 miles of streets in less than 18 hours. According to J. A. Abbott, Jr., Superintendent of Streets, the 522's performance far exceeded that of other loaders used in the past. It was especially impressive in view of the fact that this was the first time it had ever been used, and also sufficient trucks were not available to keep it operating continuously. Mr. Abbott states, "I personally feel that the 522 Barber-Greene is the answer to the snow removal problem. It is economically priced for use in small towns and several could be used to solve the same problem in larger towns."

Helps Immensely on Snow Removal

Johnston, N. Y.—At negligible cost, this town has converted its 522 Bucket Loader into a Snow Loader capable of handling up to 5 cubic yards of snow a minute. Mr. A. H. McCaffrey, city engineer, affirms that the economies of snow removal are well appreciated by city officials and that the Model 522, with the aid of a few trucks, eliminates congestion and slowup of traffic caused by snow, especially in the business section.

Added incentive to use the 522 to clear streets fast in many cities is maintenance of parking meter revenue—a valuable source of income that suffers when streets are clogged with snow.

Removes 20 Yards of Snow Per Minute

For snow removal on a large scale the 548-A Loader offers the impressive capacity of up to 20 cubic yards per minute. Pneumatic-tired, with 4-wheel drive, it travels at 7 miles per hour road speed. Swivel conveyor allows trucks to travel in the same direction as the Loader. And the 548-A is convertible to a Bucket Loader.

84652

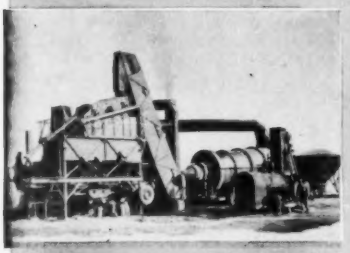
THE B-G LINE CUTS COSTS ALL ALONG THE LINE...

See Barber-Greene for:

B-G PORTABLE CONVEYORS: For moving all bulk materials and packaged goods. Variety of lengths, belt widths and capacities. Electric or gasoline power.

B-G DITCHERS: Crawler and pneumatic tire mounted, for digging trenches from 5½" wide, 4' deep to 24" wide, 8' 3" deep.

B-G PERMANENT CONVEYORS: Complete, standardized equipment including carriers, take-ups, drives, frames, etc.



B-G BITUMINOUS PLANTS: Highly portable plants for producing all types of mixes—up to 120 T.P.H.

B-G FINISHERS: Automatically place smooth level surface regardless of variations in subgrade.

B-G COAL YARD EQUIPMENT: Belt and chain-and-flight Portable Conveyors; self-propelled, pneumatic-tired. Also, hopper-car Unloaders.

To Help You Cut Corners . . .

Barber-Greene Experience is at Your Service

Cutting costs these days is of major importance to everyone whose business involves the handling and rehandling of bulk materials. And it's a subject in which Barber-Greene representatives are well versed and widely schooled—in which their advice may prove invaluable to you. If you're attempting to cut costs by eliminating the use of expensive equipment and manpower, see your Barber-Greene distributor or write directly to Aurora, Illinois. You may be sure your problem will gain quick and helpful consideration.

Barber-Greene Company
Aurora, Illinois
Cable address "Bargreene"

Send information on the Barber-Greene's checked below as indicated:

- ☐ 545-A Loader
- ☐ 522 Loader
- ☐ 82-A Loader
- ☐ 522 Snow Loader
- ☐ 548-A Snow Loader
- ☐ _____
  Other B-G Equipment
- ☐ Have a Representative Call

Name _____

Company _____

Position _____

City _____ Zone _____ State _____

Before You Bid . . .
Before You Buy . . .
Send This Coupon!

Don't overlook any opportunities these days to widen your margin of profit! In the Barber-Greene line there are many machines—many opportunities—for efficient application to help you bid successfully, to help you operate your business more efficiently.

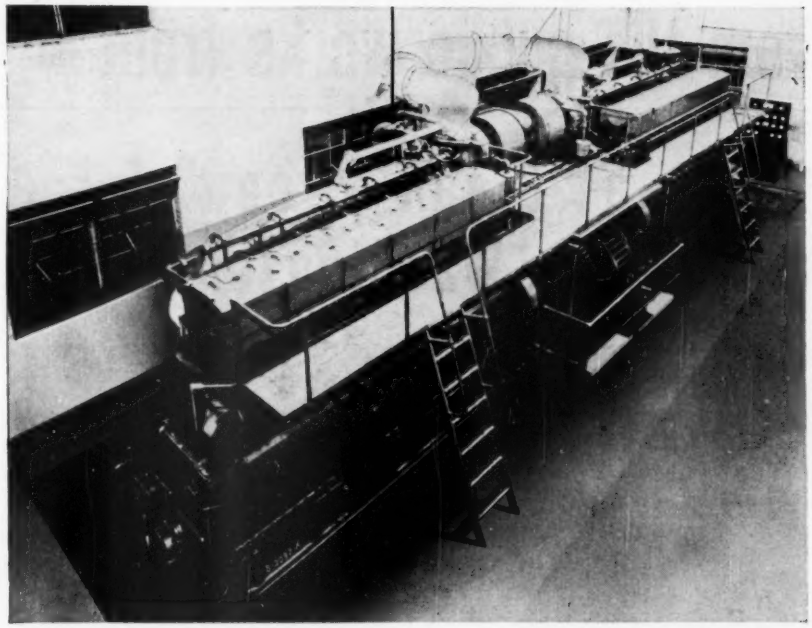
Fill in and send this coupon to get full, prompt information on the Barber-Greene equipment which interests you. Or see your Barber-Greene distributor.

BARBER-GREENE COMPANY
Aurora, Illinois

NEWS

FROM THE PUBLIC WORKS FRONT

AS REPORTED BY THE DEVELOPMENT ENGINEERS, FIELD SERVICE REPRESENTATIVES AND CUSTOMERS OF WORTHINGTON



Worthington 16 X 20 SEHPG Twin 6 gas Diesel engine in municipal power plant at Lafayette, La.

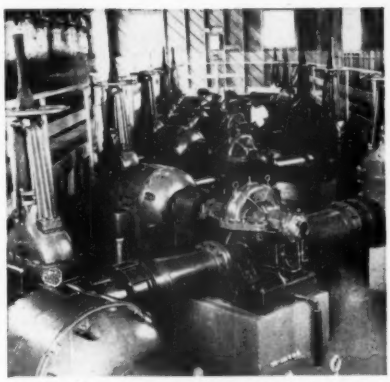
Fueling a Diesel with Gas Saves $5000 a Month

Because natural gas is readily available at Lafayette, Louisiana, the municipal power plant there uses it to fuel its Worthington gas Diesel engine. R. P. Hebert, the chief engineer, says: "Our actual cost of generating power with our Worthington gas Diesel is 2 mils per KW hour. Fuel oil costs 9 mils per KW hour, so we figure that we are actually saving about $5,000 a month by running our Diesel with gas."

But that is not the only saving with Worthington. Mr. Hebert reports: "Next to the low fuel cost of the Worthington gas Diesel, the most remarkable thing about the Worthington engine is its low lube oil consumption. Worthington estimates 4,000 BHP per hour for each gallon of lube oil consumed. Actually, we are getting about 10,000 BHP per gallon."

Maintenance cost is also low. "Maintenance cost on the Worthington Diesel has been low and operation steady. We have been operating the engine at a steady clip. In July, for example, she has operated for 714 out of 744 possible hours."

5 Wartimers Pump 29,160,000,000 Gallons Without Repairs or Shutdowns



Six Worthington pumps and motors in the Lower Otay Pumping Plant, San Diego, Calif.

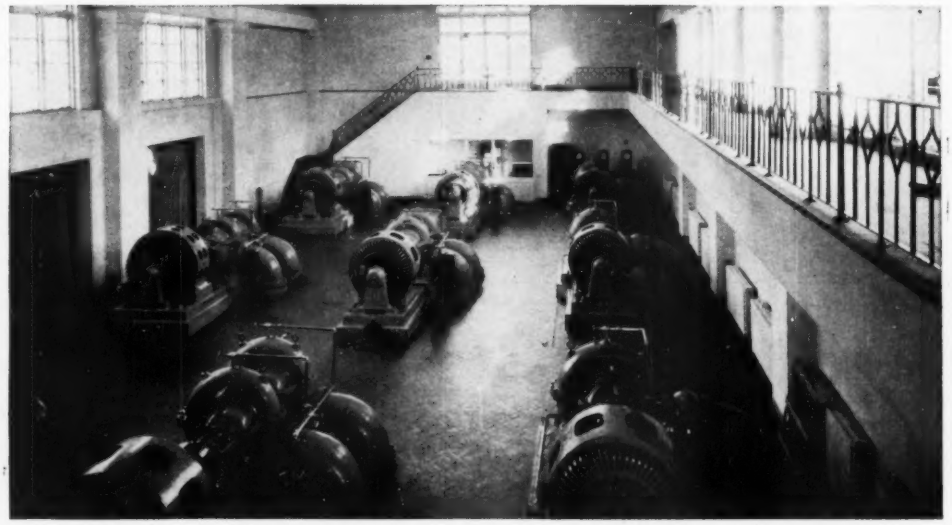
To increase the water draft on the Otay-San Diego Main Pipe Line, the city of San Diego found it necessary in 1945 to install a booster pumping plant and thus increase the flow from 18 mgd to 27 mgd.

Six Worthington 10" Type LA pumps, driven by 150 hp motors, each unit rated at 5.4 MGD, were placed in operation on July 11, 1945. Five of the pumps are in operation at any one time. The plant has pumped about 27 mgd for a period of 3 years, or a total of 29,160,000,000 gallons, practically without interruption, and without any repairs or material shutdowns.

Mr. Fred D. Pyle, Hydraulic Engineer of this plant, writes, "The pumps and motors have performed in a most satisfactory manner, and are a credit to your company."

WORTHINGTON PUMP AND MACHINERY CORPORATION, HARRISON, N. J.

Virtually a "Clean Sweep" for Worthington in Washington, D. C.



Worthington centrifugal pumps at New Jersey Avenue main sewage pumping station, Washington, D. C.

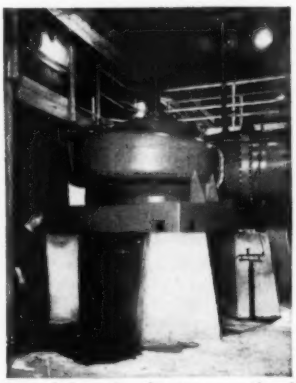
In the District of Columbia practically all of the water flows from source to disposal under the impulse of Worthington.

Drinking water furnished by the Washington Aqueduct, water supply system to the city, is taken from the Potomac River just above Great Falls. It is treated and pumped in part by the Dalecarlia Pumping Station, at the city's western boundary, directly to the District of Columbia distribution mains or to other pumping stations.

Originally there were nine Worthington filtered water pumps installed at Dalecarlia Pumping Station. One of these on being replaced by a larger unit was reinstalled as an emergency booster in the Anacostia area during the war.

The four Sanitary and six Storm Water Pumping Units at the New Jersey Avenue Pumping Station are Worthington-Electric Machinery. Some years ago, when the old steam-driven vertical centrifugals of another make were to be replaced, the contract was given to Suburban Engineering Company of New York whose low bid was based on furnishing Worthington-Electric Machinery units.

From New Jersey Avenue, sewage is pumped to the District's Sewage Treatment Plant at Blue Plains, D. C., where the four main pumps and motors are Worthington-Electric Machinery. From Blue Plains the effluent is returned to the Potomac—thus completing the cycle over which Worthington is encountered every step of the way.



One of four Worthington centrifugal pumps at Blue Plains Sewage Treatment Plant, Washington, D. C.

The District's pumping station at Bryant Street is scheduled to be completely rehabilitated and in connection with this modernization, Worthington has been awarded the contract for ten Worthington-Electric Machinery pumping units.

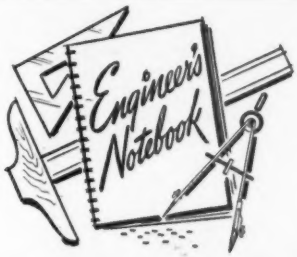
The Dalecarlia Pumping Station also supplies all the public water used by Arlington County, Virginia, where it is pumped into the distribution mains by three Worthington pumps.

Worthington also has tens of thousands of water meters in the District of Columbia measuring the water pumped by Worthington pumps.

The total capacity of Worthington pumps in service and under contract for the District of Columbia water, sanitary, storm water and sewage treatment systems is 1,424,000,000 gallons per day.

Worthington Pump and Machinery Corporation
Harrison, N. J.

NEWS

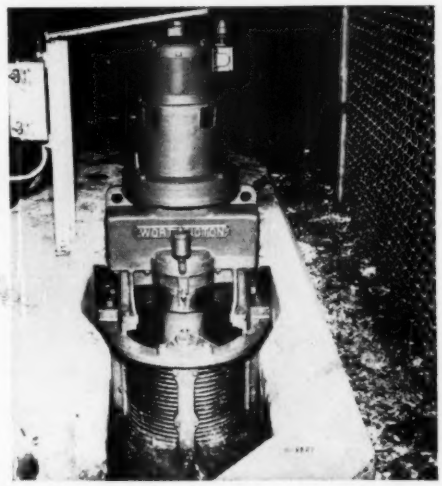


The Comminutor

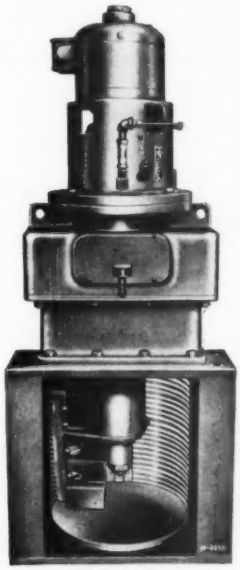
The modern trend toward complete mechanization of sewage treatment plants is marked by the development of the comminutor, the device which screens out large solids in raw sewage and reduces them to a selected working size that will pass through a fine screen without later clogging mechanical equipment.

Comminutors of the type manufactured by Worthington are so designed that they will operate completely automatically, thereby eliminating the undesirable task of screening and disposal. Unsightly solids and offensive odors, usually connected with sewage treatment, can be made annoyances of the past.

Comminutors are generally used as a preliminary to treatment processes. Comminution is best performed by setting the sewage machine in a channel preferably after a grit chamber and preceding a primary settling tank. The comminutor may also be located so as to discharge into a wet well and, if necessary, the motor can be mounted above a possible flood elevation and intermediate shafting employed.



Worthington Comminutor (downstream view) installed in Essex Fells Sewage Treatment Plant, New Jersey.



Worthington Comminutor, upstream view.

The Worthington comminutor is installed in existing or new straight sewage channels in single or multiple units, requiring no special channel design. Since the raw sewage is permitted to flow straight through the screen, installation problems have been simplified and cost minimized.

It consists of a compact, vertical unit comprising a screen, a mechanism for comminuting the screenings, and an electric motor. Only two racks of cutters are employed to simplify occasional sharpening or replacement.

The vertical, semi-circular, stainless steel screen retains all the coarse matter too large to pass through its horizontal 5/16 inch wide slots. An oscillating arm fitted with a rack of stainless steel cutters collects the screenings momentarily accumulated on the screen's inner surface as it moves back and forth through an angle somewhat less than 180 degrees.

Centrally located at the screen is a vertical, stainless steel stationary cutter. Since the teeth on the oscillating cutter pass through the teeth on the stationary cutter as the arm oscillates back and forth, comminution is performed when the solids are engaged between the two. A gradual cutting and shredding action is assured for the oscillating cutter is at an angle relative to the stationary cutter.

The small, vertical electric motor, usually directly mounted on the comminutor, drives the oscillating arm through a Scotch Yoke mechanism, which converts rotary motion into oscillating motion. The speed of the motor is reduced by means of a planetary gear, an integral part of the motor.

The effluent from the comminutor contains cut and shredded solids that have been screened, hence are of a workable size that settles rapidly, less likely to cause large amounts of scum, and do not clog mechanical equipment. Comminution is performed rapidly, continuously, and automatically; consequently the need for screening disposal has been eliminated and sedimentation and sludge digestion improve.

"Never Again in Their Generation

. . . or for Many Generations to Come"

When worn out, corroded, rustable service pipe is replaced by STREAMLINE Copper Pipe, the operation will not have to be repeated for many, many generations to come —if ever.

Rustable piping, which has been in service for a number of years, may outwardly still appear to be in fair condition, but it is almost a certainty that the walls of the pipe, in many places, have been so reduced by corrosion, that it is only a matter of time until failure occurs. More than that, the internal capacity of the pipe has, in the great majority of cases, been greatly reduced by the accumulation of slime and corrosion.

An installation of STREAMLINE Copper Pipe and Fittings insures a lifetime, trouble-free piping system for water service work or for plumbing and heating in the plant buildings, that with the possible exception of extremely abnormal water conditions, need never again be replaced. Constant vibration, resettlement of fill, etc., has no effect upon it.

STREAMLINE Fittings and Copper Pipe (Type K) are the ideal materials for water works use; for many applications in filtration plants; in aeration lines and in heating coils using the sludge digestion system in sewage disposal plants...and Type M Copper Pipe for the majority of plumbing and heating purposes in municipal buildings or water works plant.

STREAMLINE Copper Service Pipe, we believe, will soon be available for water works use. Plan to use it in your postwar replacements or for new service work.

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PIPE AND FITTINGS DIVISION
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It's A Water Hog

Yes sir! It handles anything from seepage to 15,000 gallons per hour. And it won't clog while pumping solids. Self-priming, of course, and *fast.* Has automatic seepage control, guaranteed 28 ft. suction lift, plenty of discharge pressure, and a built-in gasoline-engine that has the *guts* to keep going without fussing or babying under the toughest working conditions.

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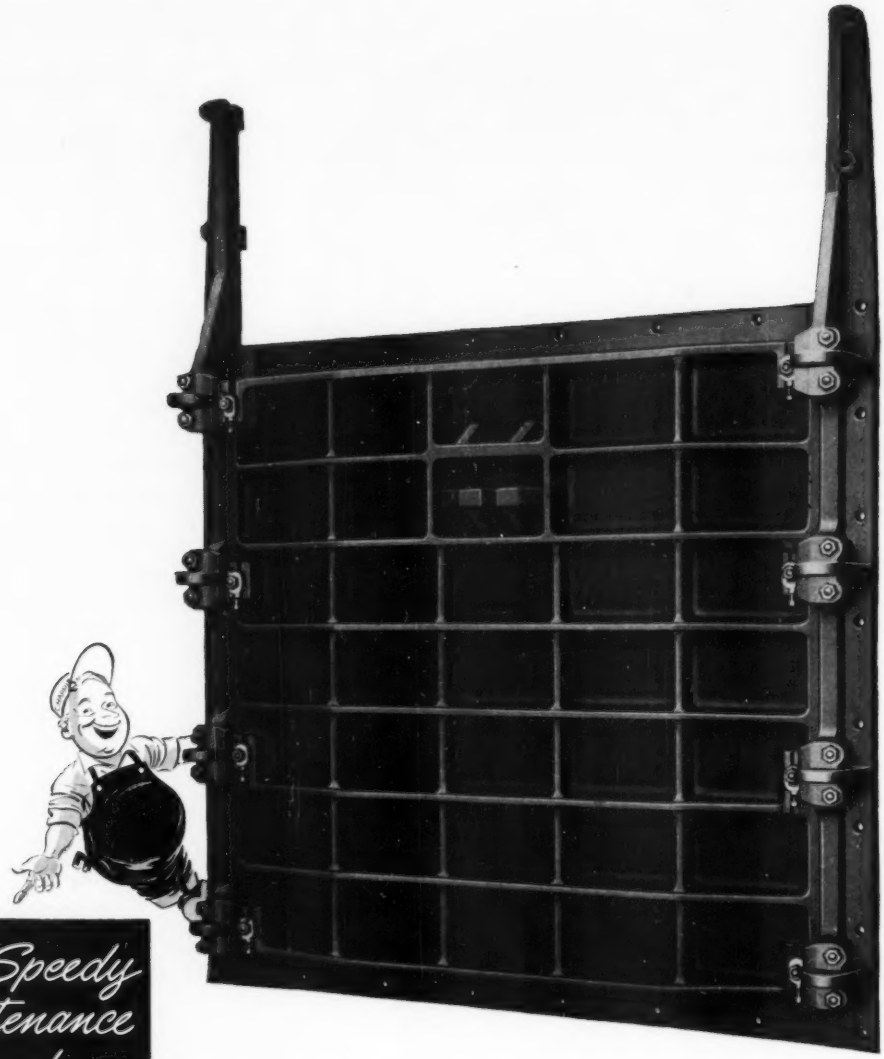

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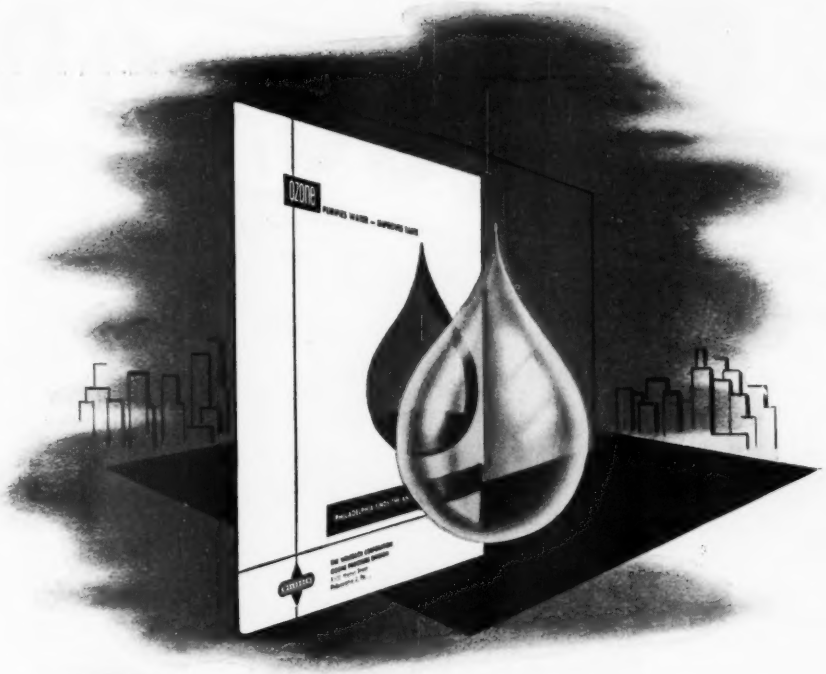
Chapman Sluice Gates are *standardized* for faster installation... easier maintenance. All parts are completely interchangeable... match-marking in the field unnecessary. Repairs and replacements can be speedily made without time-consuming field alterations.

You can get Chapman Sluice Gates with any type of operating control—manual, hydraulic cylinder, or motor unit. Installation of the totally enclosed, weatherproof motor is simply a matter of connecting the power leads. Write today for complete information.

The Chapman Valve Mfg. Company
INDIAN ORCHARD, MASSACHUSETTS



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This new Ozone installation in the Belmont Filtration plant in Philadelphia currently treats about 36,000,000 gallons daily with an ultimate capacity of 70,000,000 gallons a day. It was designed, built and installed by The Welsbach Corporation after two years' of extensive tests demonstrated the efficiency and effectiveness of the Ozone process in producing high quality drinking water . . . pleasant in taste and odorless . . . at reasonable costs.

Do you have a taste, odor or color problem in your water supply system?

Philadelphia's answer through the Welsbach Ozone Process can be your answer, too!

Write today for the Philadelphia story on Ozonation at the world's largest Ozonation plant. The booklet, "Philadelphia Finds the Answer," will be gladly sent you.

THE WELSBACH CORPORATION
OZONE PROCESSES DIVISION

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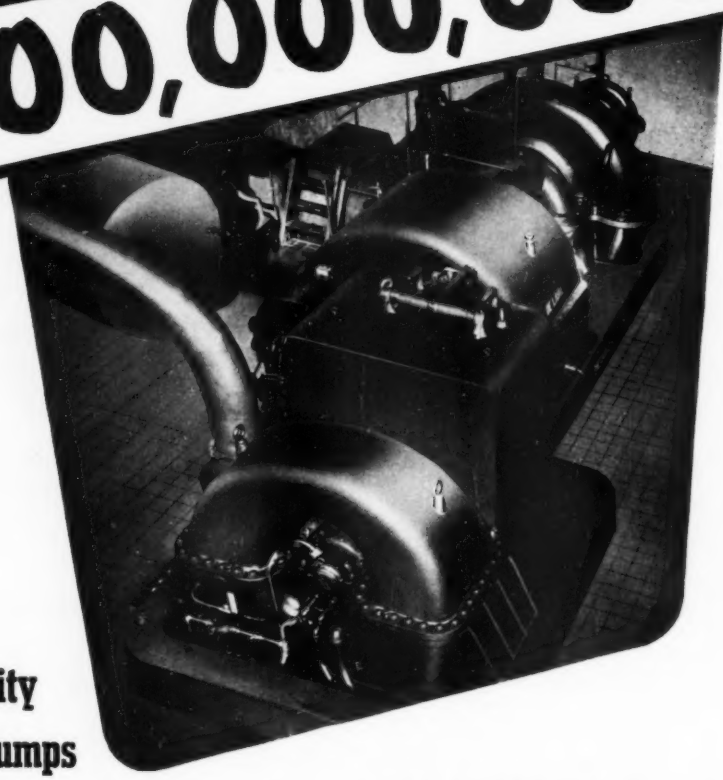
Philadelphia 2, Pa.

1,300,000,000



Total Capacity of De Laval Pumps in the City of Chicago . . . 1,300,000,000 Gallons Daily

In the year 1920, the City of Chicago installed its first turbine-driven centrifugal pump – a unit of 60 mgd capacity in the Central Park Station. The performance, trouble-free operation, economy and flexibility of this unit proved to be so satisfactory that additional De Laval turbine-driven pumps were installed in rapid succession.

Today, the City of Chicago is served by a total of 16 De Laval turbine-driven pumps and 5 De Laval motor-driven pumps having a total capacity of one billion, three hundred million gallons daily.

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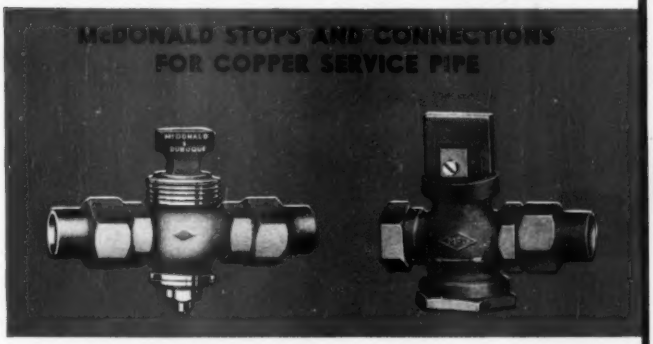

Plate E-4727—Minneapolis pattern. Solid brass tee handle curb stop. Round way. For copper service pipe both ends. Also available in stop and drain pattern. Sizes—½, ¾, 1, 1¼, 1½, and 2 inches.

Plate E-4711—Combined cap and tee handle inverted key curb stop. Round way. Inlet for copper service pipe, outlet iron pipe thread. Also available in stop and drain pattern. Sizes—½, ¾, 1, 1¼, 1½, and 2 inches.

CURB STOPS

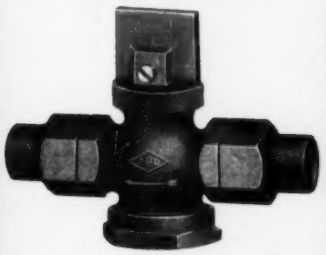

Plate E-4713—Combined cap and tee handle inverted key curb stop. Round way. Both ends copper pipe couplings. Produced from 85-5-5-5 metals with highest mechanical exactness. Design eliminates possibility of sand and extraneous material from entering plug. Also available in a stop and drain pattern. Sizes ½, ¾, 1, 1¼, 1½, and 2 inches.

CORPORATION STOPS

Plate E-4701—Inlet is Mueller thread. Outlet is for copper service pipe same size as stop except ¾ inch size which is for ¾ inch copper tubing. With coupling nut as shown. Sizes—½, ⅝, ¾, 1, 1¼, 1½, and 2 inches.

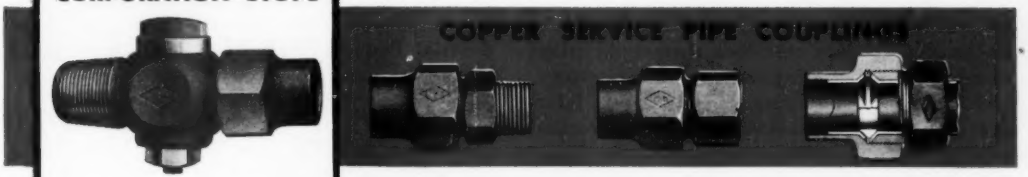

Plate E-4753—Male iron pipe thread at one end and for copper service pipe of size stated at other end. Sizes—½, ¾, 1, 1¼, 1½, and 2 inches.

Plate E-4754—Female iron pipe thread at one end, and for copper service pipe of size stated at other end. Sizes—½, ¾, 1, 1¼, 1½, and 2 inches.

Plate E-4756—For copper service pipe at both ends. Made with a double taper cone between the stud and coupling nut. Sizes—½, ¾, 1, 1¼, 1½, and 2 inches.

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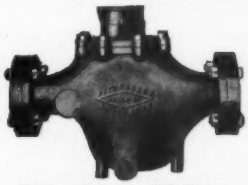

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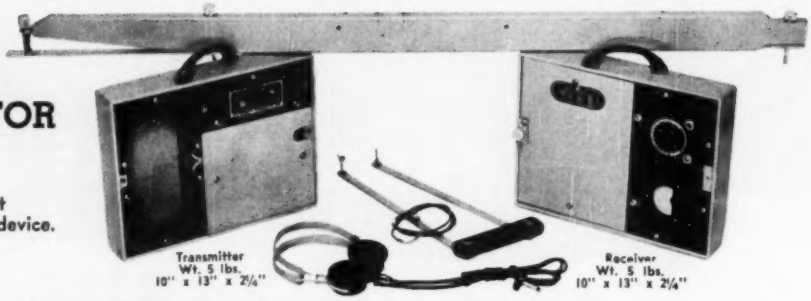

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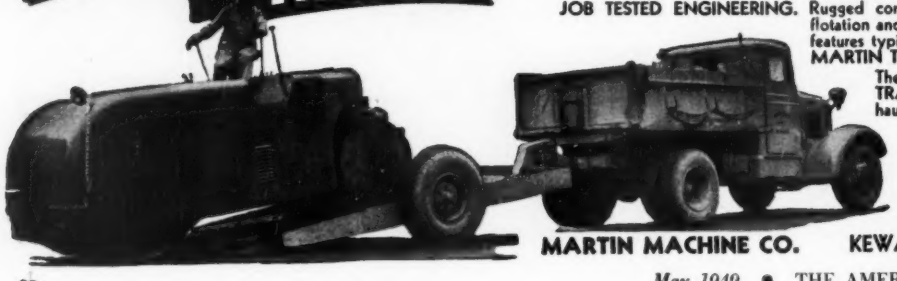

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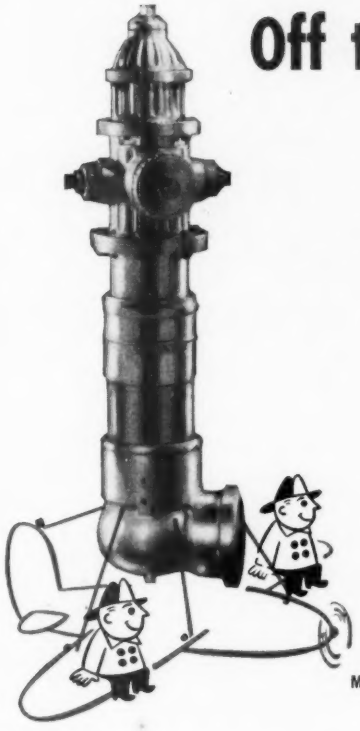

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WESTWARD AGAIN for R. D. Wood people and the Mathews Modernized Hydrant; but this time it is Chicago.

As at past A.W.W.A. conferences, we will have a full-scale working model of the hydrant on display. Many of the delegates are probably familiar with this product; and so far as they are concerned much of our time no doubt will be given over to meeting old friends and discussing matters of common interest. We look forward to it with great pleasure.

As for those of you who have never seen the Mathews, we hope to meet every one of you, too. Stop by and let us show you why it is so often said that cities protected by Mathews Modernized Hydrants are the safest.

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3. One copy each of special information reports issued monthly. Partial list of recent reports:

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Parking Meter Administration
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25,000-50,000 — Ashtabula, O; Clarksburg, W. Va.; Dubuque, Ia.; Jackson, Mich.; Mancester, Conn.
10,000-25,000 — Bessemer, Ala.; Bismarck, N. Dak.; Gulfport, Miss.; Laramie, Wyo.; Sumter, S. C.
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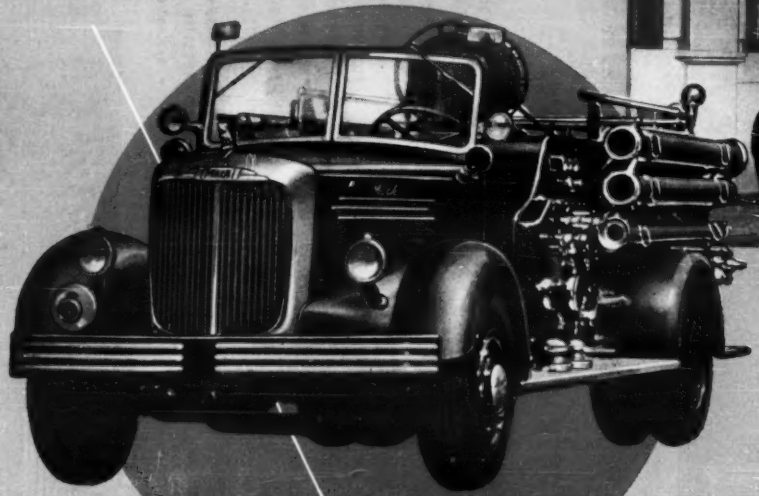
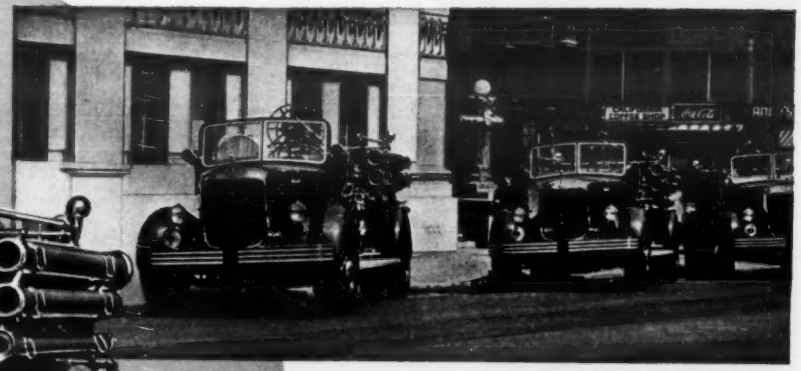
1313 East 60th Street — Chicago 37, Illinois

OAKLAND'S

Out in Front..





Right out in front of the Oakland, California, City Hall are 4 new Mack Type 21, 1250-gallon triple combination pumpers representing the last word in performance. Powered by 275 horsepower engines, each Mack features a 250-gallon water tank, high-pressure hose reel, and the latest "Centrifog" 4-stage auxiliary pump with 50-gallon capacity at 800 lbs. pressure.

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● In Oakland too — as in over 1000 other progressive communities — Mack fire apparatus are out in front — in modern design . . . performance . . . reliability.

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Remember, no matter what your fire-fighting requirements may be, there's a Mack that can more than satisfy your needs. Team up with the leader . . . get out in front . . . and *Modernize with Macks.*

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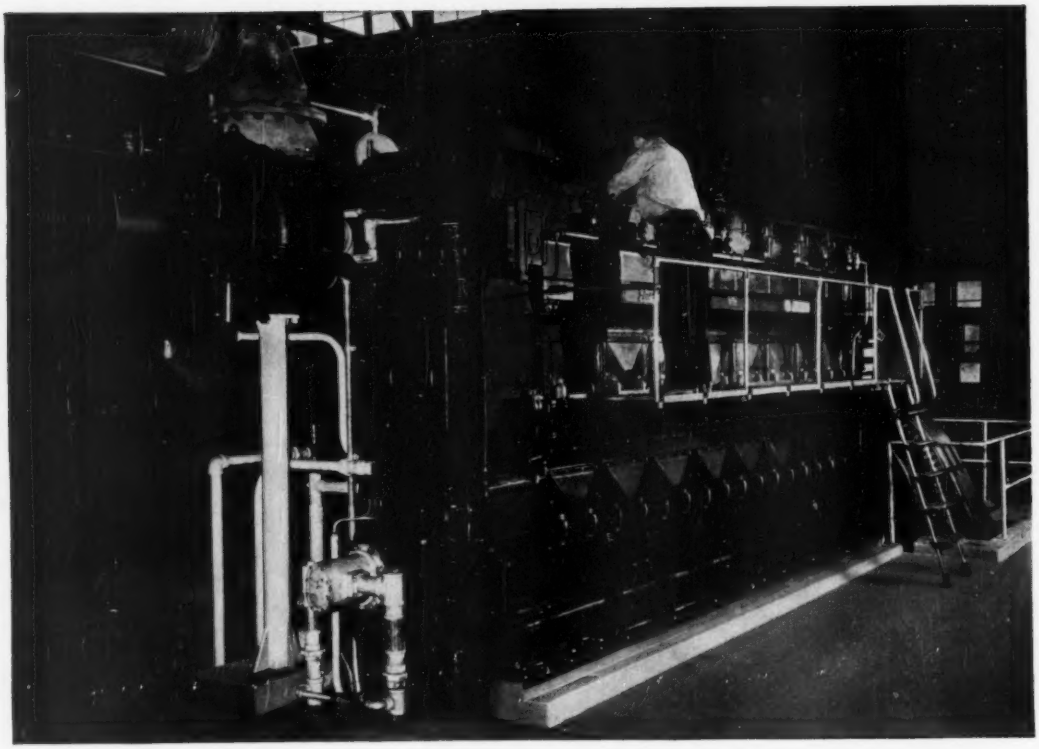

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. . . but only a trickle for power

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They knew they had to prevent a power shortage . . . so they decided to install a Diesel generating unit just as quickly as possible. Officials of this utility company contacted our Superior Engine Division and told them about their problem.

In just 72 days from the time the order was placed, Superior had delivered and helped complete the installation of a 1000 KW generator unit, powered by an 8 cylinder, 1440 hp. turbo-charged Superior Diesel. This installation proved so successful that recently they ordered another Superior.

Yes, you can depend on our Superior Engine Division for outstanding service whenever it is needed. And you can be sure that Superior Diesels will provide an equally dependable source of power. We would appreciate an opportunity of showing you the advantages they offer.

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"City highly endorses Badger Meters and Testing Machines"

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In over 5000 communities, waterworks men know that "It pays to BUY BADGER".

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You will find a Badger Meter size and type for every waterworks service. Shown here are Model SC-IOT (for warm climates), and Model A-IOT (for cold climates) . . . sizes ⅝" to 1¼" . . . other models in sizes up to 12". Write for complete information and prices.

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ACCURACY • LOW-COST MAINTENANCE • DURABILITY • SENSITIVENESS

The Sensational New

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PIPE LOCATOR

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- Featherweight - only 11 lbs. complete.
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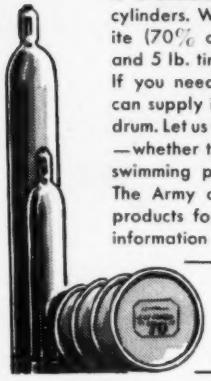
THREE GOVERNMENT STANDARD CHLORINE PRODUCTS FROM ONE SUPPLIER



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RESERVOIR LININGS (NEW AND OLD) ● CONCRETE AND MASONRY REPAIRS ● STEEL ENCASEMENT ● FIREPROOFING ● STEEL COAL BUNKER, STACK, HOPPER, AND PLATE LINING ● SEWER LINING AND REPAIRING ● CANAL, DITCH, AND DRAIN LINING.

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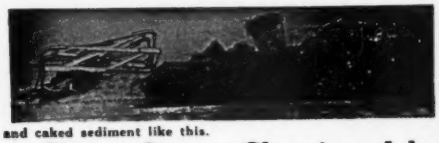
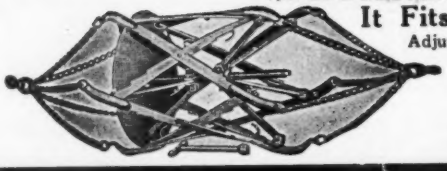
EXPANDING ROOT CUTTER & SEWER CLEANER



Open and in action removing roots and caked sediment like this.



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Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

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Experience of 30-Odd Years in Production of UTILITY BODIES

Type B-4—features 4-man crew compartment in body . . . used by power, light, and communications utilities.

We build utility truck bodies on an assembly line basis. In this field, we are the largest exclusive manufacturers of standard utilities equipment for motor vehicles.

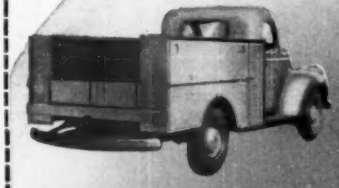
The American line includes several different types of bodies — line construction, light line service, general service and meter installation, utility, crew compartment, maintenance, installation, signal lighting maintenance, street lighting, and others.

If you have an idea on bodies for your particular fleet, chances are we already have a body for your requirements, or with a few minor changes in one of our bodies can give you what you need — on a production basis.

We can serve you with what you need to help you serve others.

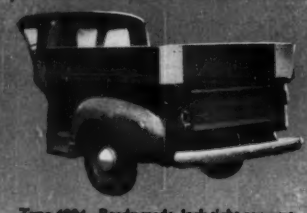
Type DPL and DT Line Construction bodies are the standard design for power, light, and communicating utilities.

American Tower Lift — Provides working heights of better than 30 feet. Used in line construction work, street lighting, signal maintenance, tree trimming, and many other types of work. Two models—heavy duty and light duty.



Type 4460—Universal for all types of service work — electric, gas, etc., appliances, masons, plumbers, etc.

Surveyor — An example of an American specialized body. The Surveyor is used for carrying surveying crews and equipment.



Type 4604—Ready-made, lock tight compartments provide generous carrying space for tools and diversified equipment items.

American Revolving Aerial Ladder — American also makes the Seagrave revolving ladder, either manually or hydraulically operated.

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ACB and

Colorful Baton Rouge is spending six million dollars to make its sewer system as modern as the city it serves. Vitrified Clay Pipe has been specified for this huge project. 250 miles of new sewers, using clay pipe up to 36", are going in. This includes 10,000 house connections, most of which are 4" and 6" Clay Pipe. Three contractors on this huge project are Sullivan, Long and Hagerty of Bessemer and Birmingham, Ala.; E. L. Dalton & Co. of Dallas, Texas; Forcum-James & Co. of Baton Rouge and Dyersburg, Tenn.

BATON ROUGE
USES CLAY PIPE FOR $6,000,000 SEWER PROJECT

Clay Pipe is Vitrified to Last for Centuries

CLAY PIPE'S raw material, clay, is chemically-inert and acid-resistant by nature. When it is formed into pipe and vitrified at fusing temperatures, it becomes a strong, cohesive pipe that *can't* disintegrate . . . that delivers centuries of trouble-free service. Clay Pipe is the *only* pipe that lasts forever under *any* sewerage or drainage conditions.

If you need specific information on a Clay Pipe question, write to the office nearest you.

Vitrified
CLAY PIPE

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CLAY PIPE NEVER WEARS OUT!

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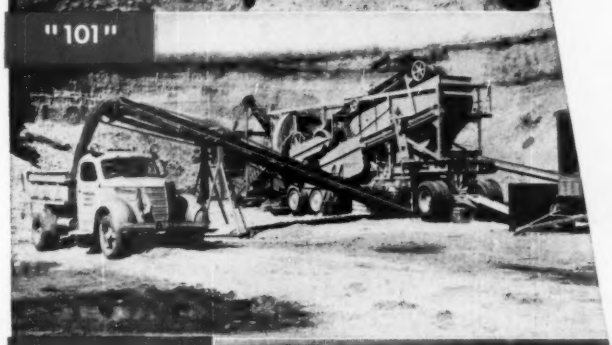

PORTABLE GRAVEL PLANTS

For Every Need

Whatever your production requirement may be—there's an Austin-Western Portable Crushing and Screening Plant to meet it. From the smallest single-unit plants to the magnificent two- and three-unit combinations every Austin-Western Portable Plant is correctly balanced from feed to delivery conveyor, equipped with high-capacity crushers, and engineered for maximum output at the lowest cost per ton. No matter what size or quantity you want—there's an Austin-Western plant "tailored" to fit your needs—designed to do your particular job with speed and efficiency.

"50" The "50" Plant illustrated is one of the many smaller sizes of Austin-Western Portable Plants. Bins, Crushers, Screens, Elevators and Conveyors are available in a wide variety of sizes and may be easily combined to meet any individual production problem.

"81" A 1036 Roller Bearing Jaw Crusher, combined with perfectly matched screens and conveyors, make the compact, efficient "81" the ideal plant for many installations. It's engineered from end to end for continuous "low-cost tonnage."

"101" The unrivalled production of the "101" is due to its high-speed Jaw and Roll Crushers, and its completely "balanced" design which provides unusually wide conveyors and extra-large positive-throw type vibrating screen.

TWIN-UNIT Multiple-Unit Plants combine light transport weight, and great flexibility in operation, with the capacity necessary for tremendous production of material. Several sizes can be produced at one time.

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From an operating trench approximately 3½ ft. by 8 ft., the HYDRAUGER bores clean open holes as far as 225 ft. This modern labor saving machine eliminates costly trenching, pavement damage, backfilling, interference with traffic, etc. Frequently saves 50%-75% on man-hours. Pays for itself within a year and often in a few weeks.

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HYDRAUGER machines are available in 3 different types (3.2 and 5.2 horsepower). Bores 2 in. and 2½ in. hole. Bore-reams 3½ in., 4½ in., 6½ in., 8½, 10½ in., 12½ in., 14½ in. and under certain conditions to 24 in. dia. hole.

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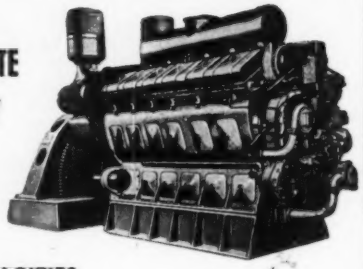

UNIT CAPACITIES 10 TO 1420 KVA

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Melted and Poured ***No Large Bell-holes to Dig***

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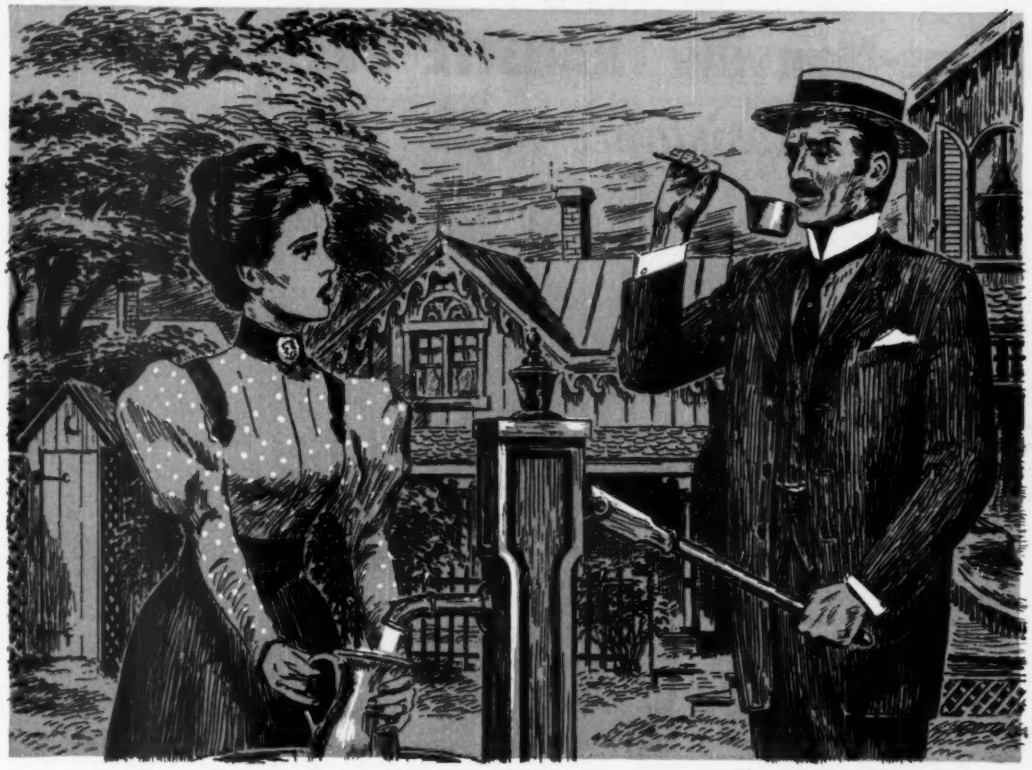
"Tastes kind of funny lately, Ma?"



DURING the past half-century, sanitary engineering has made great strides in combatting diseases caused by pollution of water sources. The year 1899, when our Company was established, also marked the development of sewage treatment in America. Today, more than 6,000 sewage treatment plants are in operation serving over half of our urban population.

The growth of water supply and gas service during this period has been equally remarkable. Today, 12,000 public water supply systems serve 85 million people. More than 20 million homes are furnished with gas for cooking and heating.

It has been our privilege to share in the progress of these public services by providing cast iron pressure pipe, for water, gas and sewer mains, and for sewage treatment and water purification plants. Better pipe today, naturally, than 50 years ago—stronger, tougher, more uniform in quality. An old-time pipe founder would be amazed by the improved casting methods, production standards and quality controls in operation at our several foundries.

To those responsible for the great progress in water supply, gas and sanitation service and their contribution to better health and living over the past fifty years, America pays tribute.

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1899-1949
U. S. Pipe & Foundry Co.
Makers for 50 years of cast iron pipe for water, gas and sewerage service.
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Engineering Facts about

Johns-Manville TRANSITE* PRESSURE PIPE

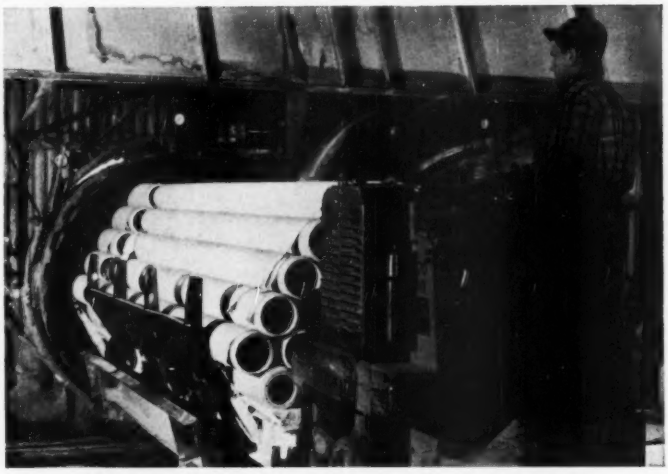
Resistance to Corrosion ... an index of long life

Ability to withstand corrosion is the most important single measure of the durability or life expectancy of an underground water pipe material. Two factors—both inherent in the pipe itself—contribute to Transite's exceptional ability to resist corrosion. These are:

1. The inherently corrosion-resistant materials of which Transite is made.

2. The specially developed manufacturing process — employed exclusively by Johns-Manville—which imparts a high degree of chemical stability to the finished product.

In the manufacture of Transite Pipe, the three basic ingredients, asbestos fibres, cement and silica —all basically corrosion-resistant by nature—are consolidated under tremendous pressure to form a pipe wall of dense, uniform, homogeneous structure. After forming, the pipe is subjected to a special steam curing process.



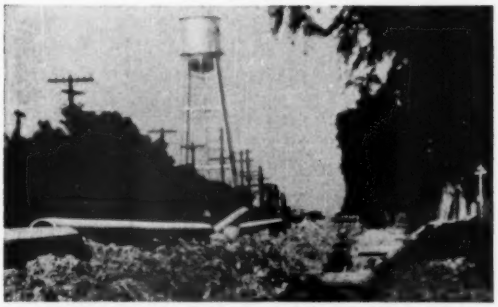
A load of Transite Pipe about to enter the steam curing tanks. This step in the Johns-Manville manufacturing process contributes substantially to the corrosion resistance of the finished pipe—and, therefore, to its long service life.

Transite Pipe was first used by this large west coast city in 1933. Its exceptional corrosion resistance—an index of long life—has already made it possible for Transite to outlive other pipe several times over.

It is in this steam curing stage that so much is contributed to the stability and structural integrity of the pipe. Here under the action of pressure steam, Transite assumes a new chemical identity. The silica unites chemically with the free lime ordinarily associated with cement products and converts it into highly stable calcium silicates. As a result of this process, the cured pipe is unusually resistant to corrosive attack throughout its entire structure.

*Transite is Johns-Manville's registered trade mark for its asbestos-cement pipe and other products.

This intrinsic resistance to corrosion has been substantiated by numerous Transite installations. Some of these have been exposed to highly aggressive soils, both alkaline and acid, for many years. Many are now serving as replacements under conditions so destructive that the useful life of the pipe materials previously used had been seriously curtailed.



Transite Pipe was installed in this Texas city ten years ago to replace another pipe material that had been destroyed by soil corrosion in 7 years. The Transite mains are still on the job today with a long useful life ahead of them.

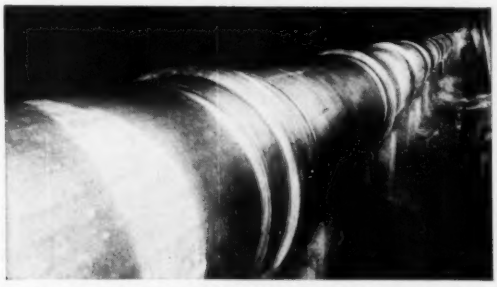
In one such installation, a Transite main installed during 1932 in an extremely corrosive soil was recently made the subject of careful study to determine its condition. Sections of the pipe, including couplings, were dug up and shipped to the factory for test. There was no evidence of deterioration. Pipe and couplings readily withstood the original factory pressure test, equivalent to four times the normal working pressure of the line.

Like thousands of other communities, this West Virginia city selected Transite Pipe because it promised assurance of maximum life. Today, after 14 years of service, the first installation of Transite has already fulfilled this promise by outlasting the pipe material previously used.

Certain types of industrial service provide an even more severe "proving ground" for the life expectancy of pipe materials, and here, too, Transite Pipe has demonstrated exceptional corrosion resistance. Coal mine service is a typical example. Here acid mine waters are frequently so corrosive that they have destroyed ordinary pipe materials in a matter of a few months or years. Yet Transite Pipe has handled these same waters under working pressure up to 150 lbs. for periods from 10 to 15 years with little, if any, indication of deterioration.

Corrosive soil conditions were so severe at this location in a prominent New England city that the life of the pipe material formerly used was only 15 years. Transite Pipe, put in as a replacement in 1934, continues to give the same efficient, dependable service as the day it was installed.

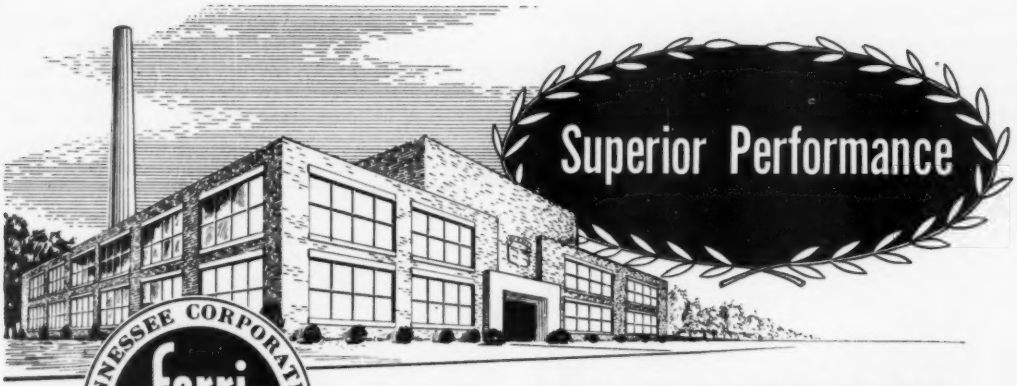
To evaluate the ability of pipe materials to withstand soil corrosion, the National Bureau of Standards has conducted an extensive series of field tests. These studies are based on examination of hundreds of pipe samples periodically removed from severely corrosive soils. In these and similar tests, Transite Pipe has consistently demonstrated its superior resistance to soil corrosion, confirming the long life expectancy which this asbestos-cement pipe has evidenced in thousands of water works installations.



Transite's ability to provide long-term, dependable service is well illustrated by its performance in coal mines, where it consistently outlasts other pipe materials in carrying corrosive mine drainage waters. The 36" Transite line shown above has been conveying acid mine waters for 15 years.

For further details about Transite Pressure Pipe, write Johns-Manville, Box 290, New York 16, N. Y.

JOHNS-MANVILLE JM PRODUCTS



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SEVEN ADVANTAGES OF FERRI-FLOC

1. Coagulation is effective over a much wider pH range than with other coagulants. Color flocs may be formed in the very acid range where other coagulants may not be employed. On the other hand, true hydrated ferric oxide flocs may be formed at pH 9-10 or even higher for the removal of turpidity and manganese.
2. The time required for floc formation, conditioning and settling is in many cases considerably shorter than that required for other coagulants.
3. Filter runs have been markedly increased in several cases.
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5. Effluents may be produced which are exceedingly low in both iron and aluminum.
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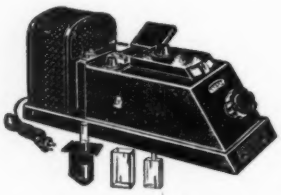
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

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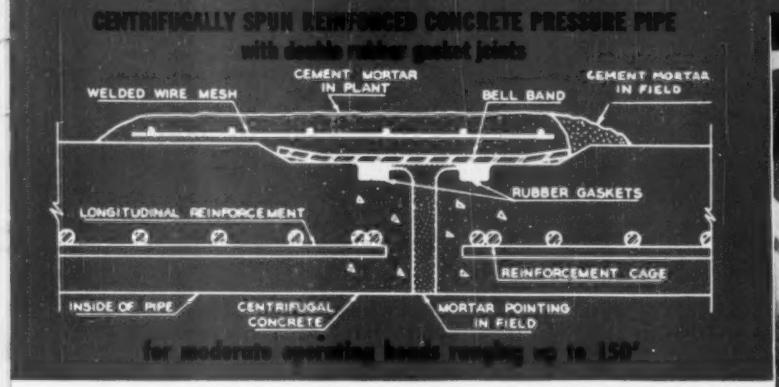
DON'T OVERLOOK SAVINGS in pipeline construction costs to reduce cost of delivered water



Installing rubber gasket in groove on spigot end of pipe.

(Above) Joint sections ready to slip into place — as a cork fits in a bottle.

(Below) Pouring soupy mortar into outside annular space — tar paper confines mortar to joint area. Inside space is pointed by hand in pipe 24" and larger, or "buttered" and swabbed in pipe under 24" diameter.

These savings are important to everyone concerned with main water supply line design, construction and operation:

1. **To Design Engineers** who want a watertight closure simple in design, rugged in construction, flexible and positive in service. Straight steel joint sleeves permit some pulling of joints to allow for minor changes in alignment or grade, while angle sleeves may be used to provide for larger deflections. This unique joint is also adaptable for connecting to fabricated elbows, reducers and other fittings.

2. **To Contractors** who desire ease and speed of installation. Steel joint sleeve is fitted in the plant to one end of each section of pipe — in effect a bell and spigot rubber gasket joint. 12 ft. sections facilitate laying. There's no need to dig bell-holes, no circumferential welding, no laborious and costly caulking. Immediate back-filling is recommended — an important cost-saving factor in itself.

3. **To Owners, Water Users and Taxpayers** who desire maximum economies in cost of delivered water. Low first costs, plus the proven advantages of performance, sustained carrying capacity and freedom from maintenance expense assure substantial savings.

This type of centrifugally spun reinforced concrete pressure pipe is helping to make substantial savings in construction costs on Unit 5, Coachella Valley Distribution System, a U. S. Bureau of Reclamation project. Information and specifications regarding this class of pipe are available on request.

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THE FAMOUS

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DOUBLE-DISC GATE VALVES

open easier... seal tighter!

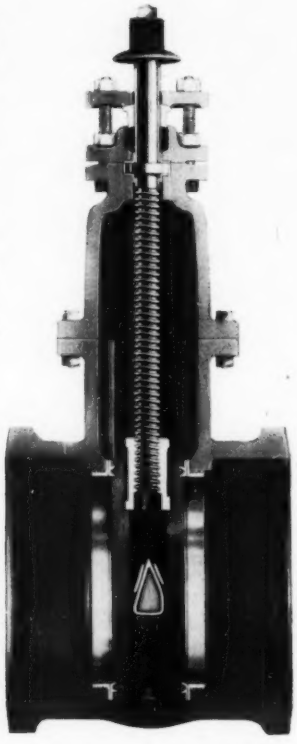
IN OPENING, THE THICK (A) SIDE OF THE STEM NUT LIFTS THE GATE ON ONE SIDE FIRST, MECHANICALLY BREAKING SEAL

GATE ON SHORT SIDE (B) OF WEDGE IS PULLED FIRST, LOOSENS EASILY. IN CLOSING, LONG SIDE (C) OF WEDGE CAUSES POWERFUL SEATING FORCE ON THAT SIDE.

THE principles of the long Wedge for greater seating power and the short Wedge for easier unseating apply to RenSSelaer Valves in sizes 10" and larger. But in ALL sizes of these famous Valves, ONE gate is ALWAYS lifted FIRST, mechanically releasing the wedges, so opening is positive. Wedging action does not seat gates until they are in *"fully closed"* position, so sliding frictional wear is minimized.

But ease of operation is only one feature of RenSSelaer Valves. SOLID BRONZE is used liberally throughout—in stems, stem nuts, wedges, seat and gate rings, glands and stuffing box nuts. Castings are high tensile strength corrosion-resistant iron. INTERCHANGEABILITY of parts insures low maintenance cost. Thousands in perfect service for over 65 years.

Experienced Field Representatives are at your call to bring you the benefit of RenSSelaer experience in Valves AND Hydrants. Their service puts you under no obligation. Call our nearest office.



Above cross-section shows 2-sided wedge on valves 10" and larger

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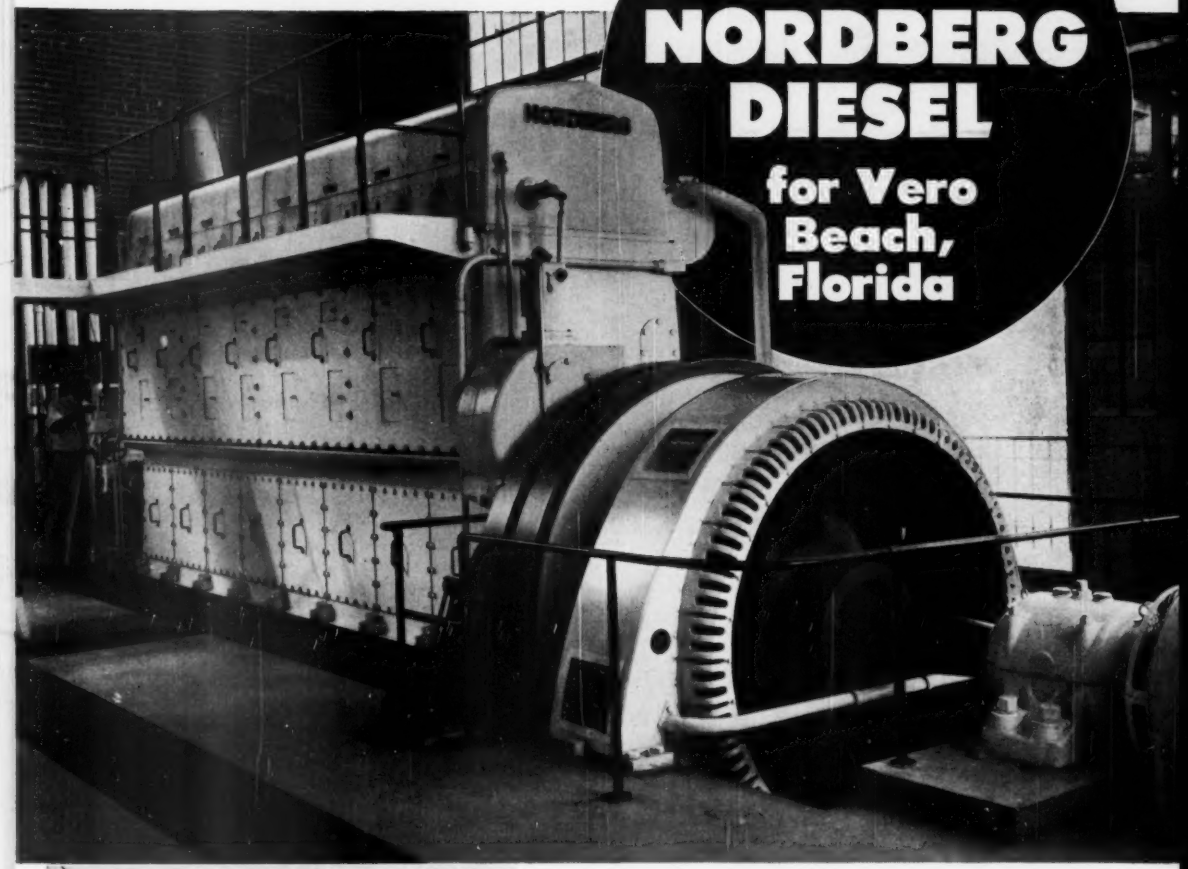
1630 H.P. NORDBERG DIESEL for Vero Beach, Florida



Directly above is an exterior view of the municipal power plant at Vero Beach, Florida.

• • • •

In addition to the 1630 H.P. engine illustrated, Nordberg offers a complete line of stationary power units, in two and four-cycle types, from 10 to 8500 H.P., including Diesel, Gas Diesel and Duafuel models.

Residents of Vero Beach can well be proud of their new spic and span Nordberg Diesel, recently installed to provide dependable electric service for this resort area on Florida's east coast. This new Nordberg is an 8-cylinder, 16″ x 22″ four-cycle supercharged unit driving a 1150 K.W. generator.

It is interesting to note that even though the view shown above was made while the engine was running, there is no camera distortion...added proof that Nordberg Diesels provide smooth, vibrationless power.

If you are considering new or increased power facilities, investigate the outstanding features offered in the complete Nordberg line of Diesel and gas burning engines.

NORDBERG MFG. CO.
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P549

A DIVISION OF NORDBERG

NORDBERG DIESEL ENGINES

NEW 18.5 M.P.H. TRENCHMOBILE

FACTS AT A GLANCE:

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- 4 DIGGING SPEEDS from 2.16 to 13.22 ft. per minute
- DIGS TO 4 FT. DEEP . . . 5" or 7½" wide
- GROUND-GRIP TIRES 9x24 rear . . . 6.50x16 front
- AUTOMOTIVE-TYPE STEER . . . truck-type hydraulic brakes
- OVERALL WIDTH 4'11" . . . 4'-6" wheelbase
- 22 H.P. ENGINE gas, air-cooled
- WEIGHT . . . Approx. 5,200 Lbs.

HERE'S a mobile, utility-size trencher you can send to do hurry-up excavation on small trenching operations for off-street connections . . . installing conduit, gas pipes, water-lines, etc., on new subdivisions . . . airport trenching. This new rubber-tired Parsons Model 80 Trenchmobile goes anywhere under its own power . . . over city streets . . . down the highway at road speeds. No waiting for truck or trailer. You just drive away . . . travel a mile in less than 4 minutes!

Operators like its simple, convenient controls . . . full visibility . . . automotive steering and positive, safe brakes. You'll like the way its wide range of traveling and trenching speeds . . . plus its heavy-duty ability to cut smooth-walled trenches in tough digging . . . licks every assignment. Everyone will welcome the new low costs you can now show with this versatile Parsons Model 80 Trenchmobile.

Get complete information from your local Parsons distributor . . . or write for new illustrated bulletin. For your major trenching, ask about the 4 big, heavy-duty Parsons Trenchliners*.

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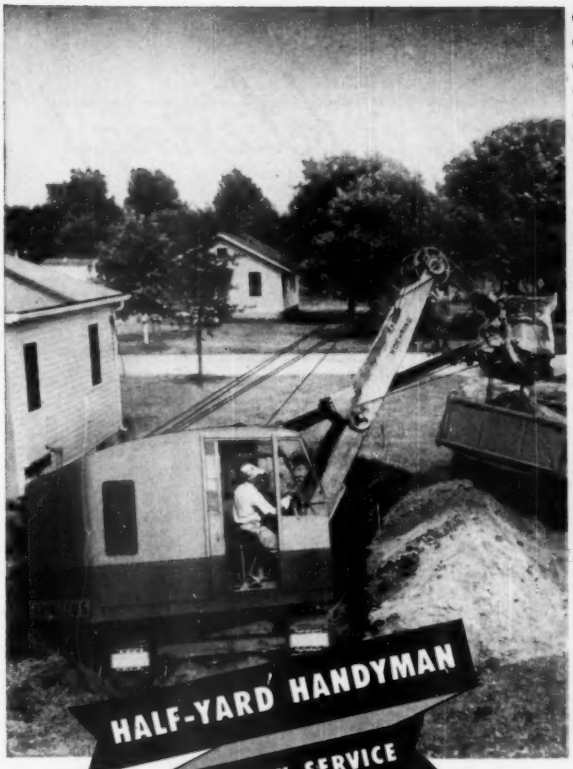
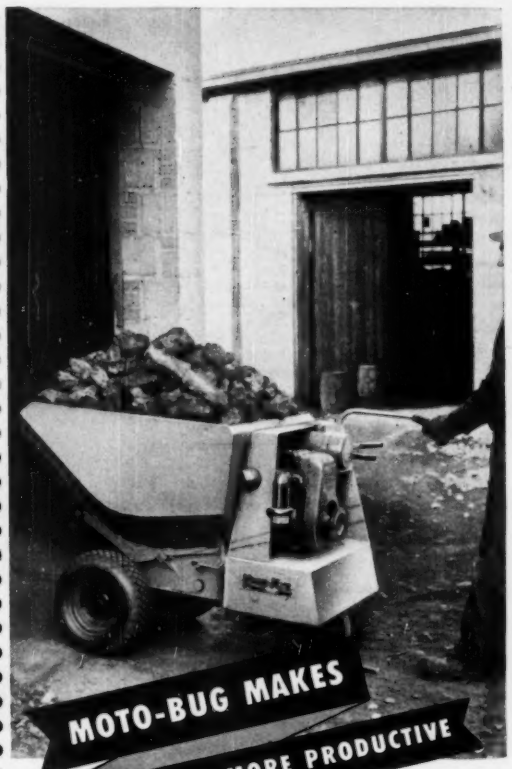


HALF-YARD HANDYMAN FOR CITY SERVICE

In this Koehring 1½-yard 205, you get complete adaptability for every city assignment. As an excavator, its compact design and short tail swing lets the 205 maneuver into tight-quarters, work close to buildings and poles. When you need pull shovel service for excavating sewers, water mains, etc., there's no need to change boom. Same boom is used for both shovel and pull shovel attachments . . . saves you up to 25% over conventional excavators that require two separate booms.

As a heavy lift crane, this heavy-duty 205 gives you 50' to 85' boom reach, and lifting capacities up to 10 tons, depending on mounting. Equally efficient as dragline, clamshell, pile driver . . . and is easily changed from one attachment to the next, as your work requires. Works on crawlers . . . rubber-tired cruiser mounting . . . or travels up to 35 m.p.h. on truck mounting.

For full details on its many exclusive Koehring design features, send for illustrated 28-page 205 catalog. Other Koehring sizes: ¾-yd., 1½-yd., 2½-yd.



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On every type of wheelbarrow work, you'll get more production per man-hour with the new Kwik-Mix Moto-Bug. This modern power wheelbarrow hauls 3 to 4 times the normal wheelbarrow load with none of hard, manual effort formerly required. Easily takes its 1200 lb. (10 cu. ft.) load up 20% ramps, grades, and over rough-going . . . hauls bigger loads . . . makes more trips right up to end of shift.

There's no manual effort required to back up . . . Moto-Bug travels by power both forward *and reverse*, at speeds from 1½ to 4 m.p.h. Operators also like its easy steering, controlled by hand lever direct to rear wheel. Turns in own length. Narrow 33" width easily clears doorways, narrow aisles. Has controlled automatic gravity dump.

You also have *standard-make* 3.9 h.p. air-cooled gasoline engine . . . choice of platform body. See for yourself how low-cost Moto-Bugs can quickly pay for themselves on *your* work. Write for bulletin *today*. Other Kwik-Mix products include . . . concrete . . . bituminous . . . and plaster-mortar mixers.

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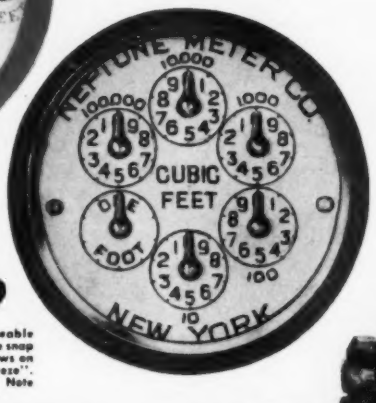
1898

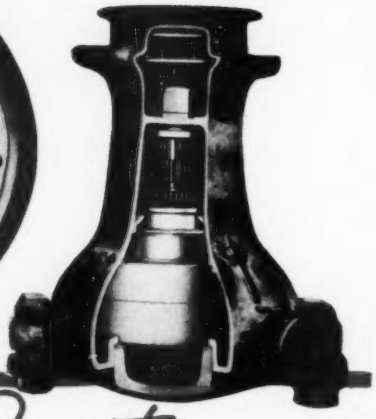
Old Register, made in 1898, borrowed from active service. To be sent back and returned to service.

Seeing is believing!



1949

Modern Interchangeable Trident Register. Three snap washers replace screws on assembly. Never "freeze". Never work loose. Note protective dust-ring.



See how the NEW Register fits into the OLD Trident!

Think what this means in terms of saving money and labor. Using Tridents, you haven't spent dollars or wasted good space on a large and varied stock of registers of different types and vintages. The man at the bench simply picks any Trident Register from a small stock . . . no time wasted searching . . . no error in selecting . . quicker repairs . . . better testing. For any Trident Register (or Gear Train, or Disc Chamber) is interchangeable with any other Trident Register made for a given size Trident Disc Meter. Reduced parts-cost is only one of many results of Trident Interchangeability.

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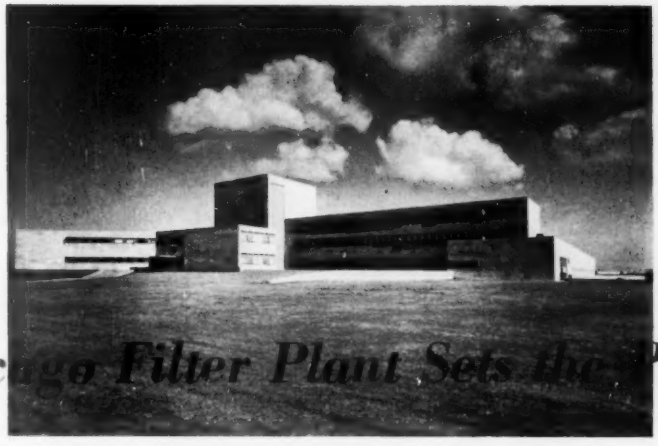
ECONOMY IN INVENTORY — THROUGH TRIDENT

Interchangeability



Chicago Filter Plant Sets the Pace

High-rate filtration, revised treatment methods, two-story settling-tank design mark the world's largest water filter plant, now in operation in Chicago

SIZE alone is a poor way to judge Chicago's new South District filtration plant, now open for critical inspection by the United States' leading water-works men gathered at the annual American Water Works Association meeting being held in that city. Undoubtedly, if Commissioner of Public Works Oscar E. Hewitt and his staff felt that water-works officials judged this big plant on size alone, they would be greatly disappointed.

For if you looked at size alone, you would miss the fact that every effort of the Department of Public Works engineers leaned toward reducing the size of this plant. You would overlook the fact that the designers laid out the filter beds to operate at a rate of 4 gallons per square foot per minute, or twice as fast as the conventional figure.

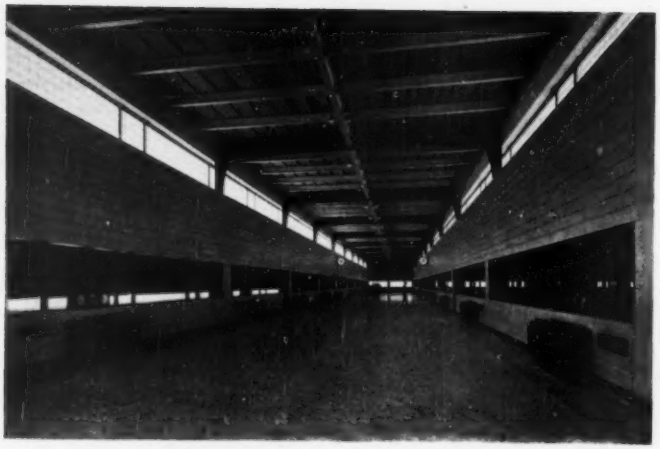
You would miss important revisions in filter-bed design; you would not notice that the settling tanks have flight collectors in only one-third of the tank where the great bulk of the sludge is dropped. You probably would view the two-story settling tanks as a curiosity rather than as an intelligent engineering answer to a difficult problem. Yet those are the features that make the plant important—not its size. The plant is built no bigger than it needs to be to meet the requirements of a certain section of Chicago; just as any plant is built to meet the needs of the community it serves.

This $24,000,000 investment in pure water for Chicago actually went into partial operation in October 1945. The first filters went into service in February 1947, and the last filters in November of that same year. Construction of the plant was slowed because of post-war materials scarcities. But this year sees it in complete operation.

If one used the conventional rating, the filters have a capacity of 320,000,000 gallons per day. However, at the 4-gallon-per-minute rate the new plant can handle over 600 mgd. The South District daily average runs about 320 mg, and the peak load has been at a rate of over 500 mg for periods of a few hours.

The new plant draws from two intakes. One connects with a crib located two miles off shore. The other is a shore intake at the filter plant. This dual source of supply allows some flexibility when taste and odor problems threaten in either area of the lake. In January 1948, the crib intake clogged with ice, and had there not been two intakes, the south side of Chicago might have been without water for a few hours. Thus they serve as a factor of safety against such accidents.

The Department of Public Works engineers formed the new plant site by bulkheading off a portion of Lake Michigan. The point they chose had



View of one of the filter galleries. Note attractive rigid frame construction.

The plant has a complete well-equipped bacteriological laboratory.

The operating floor of the low-lift pumping station.

solid rock at depths ranging from 18 to 30 feet below the lake level. The site lies next to one of the city's parks. When the area adjacent to the plant had been filled, it added 110 acres to the park and provided a larger bathing beach. The bulkhead surrounding the filtration plant encloses 39 additional acres. The structures of the plant cover 20 acres, 8 acres of which are in buildings extending above the finished ground level.

The first important structure is the intake and low-lift pumping station. The station has two intake basins, each 190 feet long by 60 feet wide. Each basin has 17 intake ports measuring 6 by 8 feet, and three shafts connect the basins to the raw-water tunnel from the Dunne crib. The intakes are designed so that each can supply all the water required by the pumps, either from the crib intake or from the direct intake forts. The water passes through screens located in the intake basins that have Shaw Box electric hoists to raise the screens. Large Mueller sluice gates located between the screens and the suction header provide this separation.

Low-Lift Pumping

The intakes discharge to the low-lift pumping station. The station pump room has a basement floor 24 feet below the normal lake level. On the operating floor 5 to 8 feet below lake level is space for nine pumps with a total daily capacity of 840 mgd. Eight horizontal-type Allis-Chalmers pumps have been installed. Four have a daily capacity of 120 mg each, and four can pump 60 mg each. Chapman cone valves are located in each discharge line, and each line has a Builders-Providence venturi meter. The low-lift pumps bring the water to the raw-water conduits at an elevation of about 20 feet above lake level.

The pumping station receives power through two separate and independent cables and transformer systems. Throughout the station duplicate transformers and cables are installed at all vital connections. In case of a complete breakdown, two small turbo-generators furnish emergency power to a few essential motors. They also supply some emergency lighting. Storage batteries supply emergency lights to the low-lift and wash-water pump rooms.

Two-Story Mixing and Settling

The mixing basins receive the water from the intake basins. These, as well as the settling basins, are built on a two-story arrangement to save space. The raw water receives its chemicals as it enters the basins and gets a rapid mix before entering the main flocculators. As the water emerges from the rapid mix, it passes through a baffled channel on its way to the Dorr floccu-

lators. At design rate, it takes the water 49 minutes to pass through the mixing basins. The flocculators are geared to provide peripheral speeds of 0.7, 1.0, 1.2, and 1.5 feet per second.

Drag Scrapers in Settling Basins

The settling basins are designed for a 3.6-hour detention period at the 320-mg design rate. The two-story basins measure 138 feet wide and 500 feet long, including the carbonation chamber at the outlet end. The first 160 feet of each settling basin is equipped with Link Belt drag scrapers and arranged for continuous removal of the sludge. To remove sludge from the rest of the basins, the basins are dewatered periodically and flushed clean.

Sludge from the plant is discharged into the lake through the 3,600-foot steel pipelines, one 8 inches and the other 10 inches in diameter. Portions of the sludge, however, can be returned to the mixing chambers if that procedure seems wise. The filter washwater passes through specially designed settling tanks and the water is returned to the plant intakes. The sludge accumulating in these tanks is discharged to the lake.

Sludge Pumping

In each settling-basin gallery is located one sludge pump of 850-gpm capacity, capable of pumping the sludge directly into the lake. To make cleaning easier, an additional sludge pump can be supplied each basin. Near the sludge well are five sludge pumps varying from 350 gpm to 2,250 gpm. Two of the pumps were installed to provide sludge return to the mixing basin, if desired, and the other three pump the sludge to the lake.

The plant has a large chemical-handling building. Alum and lime are unloaded by three Dracco pneumatic unloading units, each with a rated capacity of 10 tons per hour. These conveyors discharge the chemicals into horizontal-type screw conveyors for storage in concrete bins. The storage bins discharge directly into weigh-hoppers or into distributing screw conveyors. The plant has 35 dry-feed chemical feeders. Six are for lime, nine for alum, six for ammonium sulphate, and nine for activated carbon.

Chlorine Handling

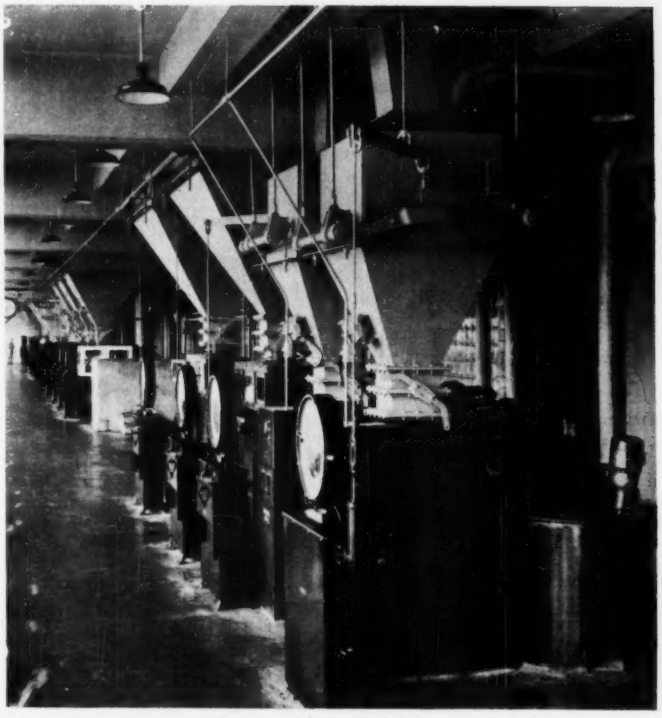
The plant receives liquid chemicals, such as sodium silicate and sulphuric acid, in tank cars and pumps them to storage tanks. It receives chlorine in one-ton containers. These are hoisted from the cars and stored on a platform located adjacent to the building. The containers, as needed, are hoisted and carried by monorail to the scale room, then placed in steel tanks resting on scales. The tanks are provided with pipe connections that will quickly permit a leaky chlorine cylinder to be submerged into a bath of caustic soda without the need of removing the cylinder from the scales. The tanks' chief purpose, however, is to warm the cylinders with water to bring about more rapid evaporation of the chlorine.

Filter-Bed Construction

The plant has 80 filters equipped with perforated-pipe underdrains and cast-in-place washwater troughs. The filter beds have a sand area of nearly 1,400 square feet. The units are capable of operating at a 10-mgd rate or 5 gallons per minute per square foot. The underdrains are of 4-inch, cast iron perforated pipe, spaced 12 inches apart with 7/16-inch-diameter holes located 6 inches apart and facing downward. This

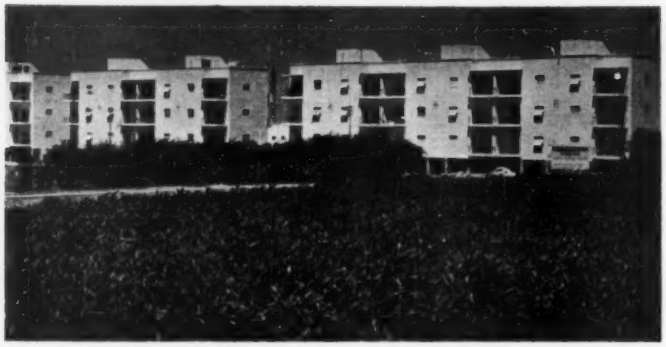
(*Continued on page* 175)

This interesting sculptural piece sits at one corner of the low-lift pump-building screen room. The bottom figure represents a workman turning on a valve. The center figure symbolizes a chemist with a beaker. The top represents a scientist with his textbook. The back of the shaft depicts water flowing in semi-abstract form.



A battery of chemical feeders.

PLANNING AND DEVELOPMENT IN ISRAEL



Apartment project for immigrants in the Tel-Aviv North "Rassco Quarter," built by a semi-public housing company. New housing is still badly needed in Israel.

By ANATOLE A. SOLOW*

—A Desert Transformed—

THE modern world hardly believes in miracles, yet in Israel today a miraculous transformation is taking place almost overnight. Out of a desert, a land neglected and wasted for hundreds of years, emerges a fertile and green country; a backward sleepy area is being changed into a modern industrialized state; out of chaos grows order, administration, planning and development. It is indeed hard to visualize a more dynamic and vital country than the State of Israel today.

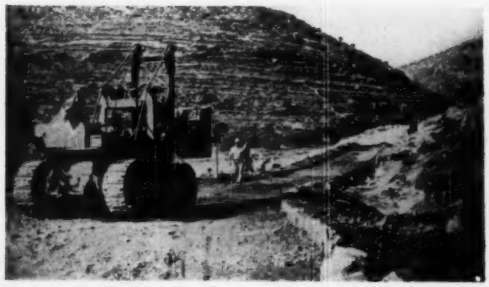
The new nation is tackling a gigantic task of development which is perhaps unprecedented in history. It is estimated that the population influx of 25,000 a month will swell Israel from its present 800,000 to about 2,000,000 or 3,000,000 inhabitants within a decade. The relative impact of such an immigration on the nation's life can be grasped by visualizing the addition of 150,000,000 to the present population of the United States during the short span of ten years. Moreover, the population of Israel has to be accommodated in a country small in area—about 10,000 square miles under the UN partition plan—and limited in its natural and financial resources.

The government of Israel recognized from the start that the problems facing the young State could only be solved by developing the country according to plans based on sound principles of population distribution, industrial location, conservation, and development of natural resources. Even in the midst of a defensive war against invading Arab armies, the Ministry of Labor and Reconstruction established a Department of Town and Country Planning. The Department, headed by a team of leading local architects, engineers, and town planners, has a staff of 80 technicians working at top speed on surveys and development plans for new towns within the framework of national and regional plans.

Kingsway, the principal business artery paralleling the port of Haifa.

Although the national planning approach is a new thing for the people of Israel, a tremendous amount of constructive development by Jewish pioneers had taken place during the 30 years of the British Mandate. It is indeed thanks to these pioneering efforts that Israel is already emerging as the significant modern power of the Middle East. In spite of continuous restrictions placed on Jewish development during

* Anatole A. Solow, Housing and City Planning Specialist of the Pan American Union, has recently returned from Israel where he spent three months at the invitation of the Israeli Government to advise on the organization of the Town and Country Planning Department of the Ministry of Labor and Reconstruction.



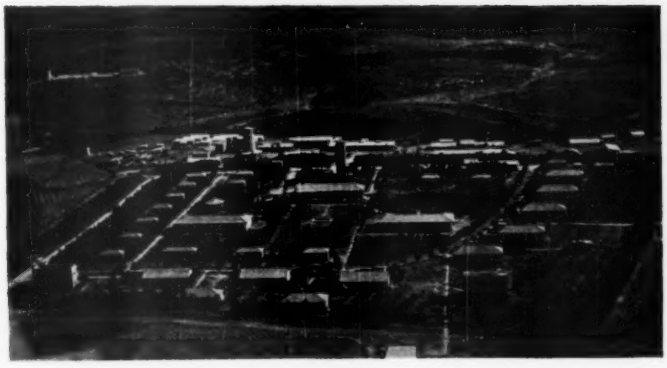
The old and the new in earth-moving methods. Left: Emergency work on the sand dunes of Tel-Aviv for the expansion of the city. Right: Building progress on Malaya Road, a consolidated permanent road from Jerusalem to coastal plain.

the mandatory regime, 70,000 people had been settled in 300 agricultural settlements by 1945. Intensity of future development is indicated by the plans of the Jewish National Fund to establish 200 new agricultural settlements during the coming year alone. A significant feature of most agricultural units is their set-up on a communal or collective basis. This new form of life is naturally reflected in the planning and physical layout of rural communities.

Industrialization of the ancient land was initiated by the erection of the Jordan River Power Plant. The generating capacity of the stations increased a hundred times from 700 kw in 1923 to 76,500 in 1943. Plans for a "Jordan Valley Authority" large-scale irrigation and power development have been under study since 1943, based upon proposals and studies made by Dr. W. C. Lowdermilk, former assistant chief of the U. S. Soil Conservation Service, and J. L. Savage, designer of the Coulee and Boulder dams. Realization of these projects would permit large-scale settlement especially in the Negev, the southern part of Israel, at present an almost empty wasteland comprising 65% of Israel's area. It is estimated that the total irrigated area, now about 1,600,000 acres, could be increased by 10,000,000 acres through these projects, whose eventual cost might amount to $200,000,000. Part of the $100,000,000 U. S. Import-Export Bank loan, which has already been granted, will be used to initiate major irrigation and public works projects.

Urban development has proceeded at an even faster pace than rural settlement. The all-Jewish city of Tel-Aviv, built largely on sand dunes, grew from 15,000 inhabitants in 1922 to 178,000 in 1945. Today, the metropolitan area of Tel-Aviv, the major urban center of Israel, is estimated to contain close to 300,000 people. It has its own port, built during recent years. The Lydda airport outside Tel-Aviv, originally constructed by the British for military purposes, is now being developed as the largest airport of the Middle East, and

(*Continued on page* 177)



Ein Hashofet, a collective rural settlement, soon after establishment in 1939.

The same settlement, seven years later.

Government by the People

By ALMA F. ESHENFELDER
Director
WNLC-League
of Women Voters' Forum
New London, Conn.

At the broadcasting studio are (left to right): Councilor Fred Benvenuti; City Manager Edward R. Henkle; Councilor Thomas Griffin; Mayor Samuel Selleck; Councilors Leo Reagan, James Neilan, and James A. May, and Alma F. Eshenfelder, Director of the Forum. Standing is Leslie Morson, manager of WNLC.

RADIO FORUM HELPS SOLVE COMMUNTY PROBLEMS

WHEN we think of radio forums, our minds focus usually on those we hear on the national networks, participated in by national figures, on topics of national or international importance. By following a similar pattern here in New London, we have a community radio forum, broadcast as a sustaining program by our local radio station, participated in by local people, on topics of local interest. In fact, the subjects are chosen for the community —the listening area of the local radio station.

The community radio forum in New London began as an experiment. The local radio station, WNLC and WNLC-FM (The Thames Broadcasting Corporation), was willing to accept this forum as a project of the local League of Women Voters, on a week-to-week basis. Inasmuch as the city of New London, with a population of about 30,000, had for its news sources and molders of public opinion one daily newspaper published in the city, one local weekly newspaper, and the twice-daily news broadcasts from the local radio station, it was felt by the directors of the radio station that a forum-type of program, bringing both sides of controversial issues and discussions of subjects of local importance, might be worthwhile. Thus, the WNLC-League of Women Voters' Forum, a sustaining program, was founded.

In March 1949, the forum presented its fiftieth program, and the trial period is over. During the first season, 1947-48, thirty-five weekly 30-minute discussions were presented, with a total of some 140 different people participating. During the 1948-49 series, the time for these weekly forums has been extended to 45 minutes, and there have been four participants on each forum, with seldom any repetition in personnel. The only deviation from the four-on-the-panel forum has been when the entire City Council and the City Manager were invited to use the forum facility to report to the residents of the city.

Courage Rewarded

In the beginning, it was obvious that some people were just not going to "stick their necks out" or "go out on a limb" by publicly airing their views. They very frankly said so. A few brave souls pioneered on the programs, and were willing to *chance* it. (Only those who live in small communities will understand the meaning of this.) To those first participants we are undyingly grateful—almost as much as we are to the brave souls who journeyed West in the covered wagon. Actually, to do the kind of thing they did during the first weeks of the forum needed the kind of courage that anything requires which focuses attention on an individual or individuals.

As the fiftieth forum has passed we can honestly say there is now no difficulty whatsoever. Men and women seem glad to come to our microphones and frequently offer their services. Many have asked to be put "on any volunteer list" we might have. One man suggested after participating in the forum that we might like to have his wife on the program. When we asked him about her particular interests (wondering where she might fit in), he simply answered that she just had "a wonderful voice for radio."

Occasionally, depending on the forum subject, we go outside our periphery and add an "outsider's" objective point of view to those of the local persons on the panel. We have had people come to our forum from most sections of the state.

Wide Range of Participants

The real purpose of the forum is to mold public opinion by airing sample attitudes of the men and women of our community. Our participants fall into many categories: members and officers of labor unions, Chambers of Commerce—both Junior and Senior, Parent-Teachers' Associations, the League of Women Voters, and veterans' organizations; professors from our educational institutions of higher learning in and around New London; teachers, principals, and superintendents of our schools in the area; police officers, both state and local; political leaders, with and

without title; the clergy; candidates for election to the City Council and the Board of Education, and members of these bodies after election; parents as such; high-school and college students as such; members of city boards, committees, and agencies; lawyers; board members and executives of public and private welfare agencies in the community; State legislators representing the area; businessmen; and so on and on. There is a steady parade of personalities, now all willing and eager to express their opinions. The forum has found its place in the community.

Newspaper Cooperation

The forum might well be credited for initiating interest in the local issues discussed on it, but the results of the forum have been greater, perhaps, because of the kind of cooperation the newspapers have given it. The local daily, *The New London Day*, gives a summary of the forum on the following day; the local weekly newspaper, *New London Life*, mentions the forum, usually editorially, and a daily, *The Norwich Bulletin*, published in a nearby city and distributed in the area, also carries a summary.

The forum presentation is a community project. It is presented in the community, for the consumption of the people in the community and participated in by them, and for the sole benefit of the community. It is fairly successful in arousing public opinion toward action, and in bringing about quicker and wiser solutions to community problems, with much less misunderstanding on the part of those most concerned—the citizens.

Some of the Topics Discussed on the New London Radio Forum

What kind of housing does New London need?
Should the Planning Board be consulted on zone changes?
Are we training youth for citizenship?
Do racial prejudices affect us in New London?
Can a community plan for itself?
What does industry need? and, What does the community offer?
Should the pension system for city employees be changed to a contributory system?
Is increased trade the answer to the development of the Port of New London?
Who is to blame for juvenile delinquency?
Youth looks at the community.
Should Social Security be extended?
What are New London's three greatest needs?
Is County Government in Connecticut a relic of the past?
Is the attack on the state mental hospitals unfair?
What have producer-cooperatives done for Eastern Connecticut?
Should there be hot lunch programs in the public schools in the City of New London?
What are the results of current unemployment in this area?
Should teachers be active politically?
Are the comics a laughing matter?
What were the significant aspects of the recent town elections?
Should the New London Board of Education levy a tax on real estate for the support of public education?

Public Roadside Control Efforts Attacked by Billboard Interests

To the Editor of THE AMERICAN CITY:

Shortly after the Ides of March, a "public relations" concern with the practical discrimination to locate itself on Chicago's "Magnificent Mile" issued and circulated a "release" decrying the effort of planners and zoners to improve the location of business along American highways.

Estimating that some 125,000 concerns in the country are engaged in roadside business of one sort or another, these gentlemen claim that the entire capital invested therein (amounting, they say, to nearly a billion and a half dollars) is imperiled by the efforts in various states to assemble business which caters to the motorist into frequent roadside business districts, instead of allowing it to scatter itself promiscuously all along the highway where anyone who pleases might set up any enterprise he pleases.

The heart of the paid advocate to promote private interests bleeds at the fate which threatens (alphabetically listed by him) "amusement places, auto dealers and garages, gas stations, grocery stores, hotels, motor courts, restaurants, roadside stands and taverns," if these businesses are required to be set back a short distance from the edge of the highway. They are all in danger of being completely destroyed—according to the claim. Consideration for increased safety to the motorist—who may perhaps be a doctor engaged in a race with the stork, or be engaged in some business not on the imperiled list — is seemingly quite irrelevant.

MARYLAND STATE HIGHWAY BILL CITED

To illustrate the "shocking" enormity of any slight effort to control and organize the proper location of businesses, the release cites the bill now pending in the Maryland legislature which creates a protective zone of 200 feet on each side of certain Maryland highways, and authorizes the State Roads Commission to apply to enterprises desiring to locate thereon restrictions similar to those now applied in thousands of urban communities under their zoning regulations. Notwithstanding any finding by the Maryland legislature that the present unrestricted land uses and uncontrolled developments along certain Maryland highways increase the hazards of travel, reduce the efficiency of the highways and cause traffic congestion, impair the attractiveness and usefulness of the highways and the value of the state's investment therein, all such considerations are declared to be completely irrelevant. Indeed, the proposal to permit the State Roads Commission to frame "reasonable" rules to minimize those evils is "shocking."

The propagandist's zeal leads him into direct misrepresentation concerning the effect of the bill on the farmer. Contrary to the statement in the release, the farmer may use any part of the 200-foot strip for agricultural purposes; he may build on it so long as he conforms to a "reasonable" setback to be established by the commission; and the same with respect to his roadside stand.

CALIFORNIA AND PENNSYLVANIA

It is further alleged in this release that the erection of fences along freeways in California is blocking convenient access to the highway by abutting owners. This also is untrue. Where a freeway stretch is created along a road previously lined with motor courts, gas stations, etc., etc., service roads are provided, and these businesses still have adequate access to the highway and continue to do business. Only indiscriminate entrance to and crossing of the highway—an acknowledged cause of many accidents—is prevented. Though not mentioned in the release, an even more "shocking" bill is pending in Pennsylvania and has the approval of Governor Duff. Generally similar in principle to the Maryland bill, it delegates highway zoning powers to a State Roadside Zoning Commission and gives that commission jurisdiction over a strip, not 200 feet from the edge of the highway, but 500 feet from its center.

The whole "release" is quite evidently a piece of billboard-industry paid propaganda. Conscious of the weakness before the public of any case presented as a mere billboard plea, the industry disguises its argument in the form of a general plea for all roadside business, and pretends that roadside business generally is in mortal danger. The fact remains — as it has been for twenty-five years—that to the billboard industry the idea of any public control of the highway corridor is abhorrent. The tiniest control may lead to greater control in the public interest, and the flimsy, intrusive billboard is the weakest member in the flock of roadside nuisances. Indeed, under some planning and control our highways might in time become decent, dignified, and beautiful. But the billboard men even oppose the purchase of wide rights-of-way (in order to provide for future traffic) as recommended by the United States Public Roads Administration.

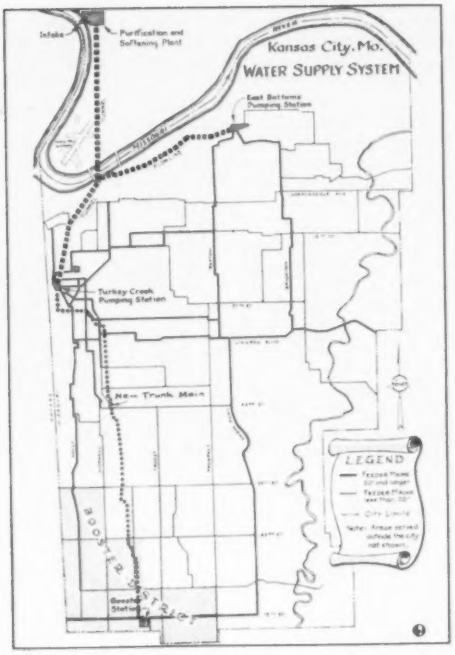
ALBERT S. BARD
Vice-Chairman and Counsel
National Roadside Council

See also "New York Removes Advertising Signs from State Highway Property," on page 120 of this issue of THE AMERICAN CITY.

Kansas City Balances Costs On New Trunk Line

Prestressed concrete leads in new 7½-mile trunk-main addition

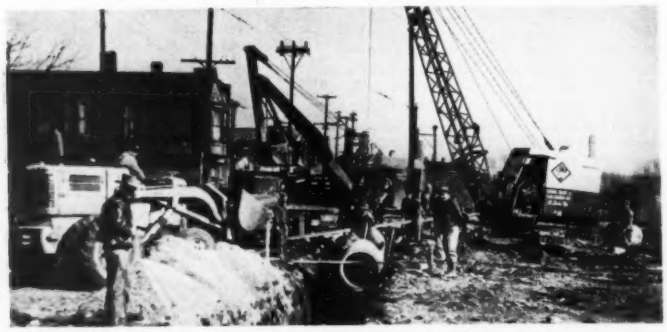
By MELVIN P. HATCHER
Director, Water Department
Kansas City, Mo.



The new line follows the dotted line shown here.

THE municipally owned water-works property in Kansas City, Mo., has just completed a 7½-mile 36-, 42-, 48-inch trunk-main addition to its distribution system. The new main is constructed with pre-stressed steel-reinforced concrete pipe laid as a backbone, so to speak, of a distribution system that includes about 870 miles of mains. The present distribution system is constructed entirely of cast-iron pipe, except for some large steel pipe just outside pumping stations and about 20 miles of steel pipe 2 inches and smaller in size. The new main is being sectionalized with cone valves and it will have 13 cone-valved connections to the larger mains in the distribution system. It is expected to add about 30% to the capacity of the distribution system.

Kansas City's distribution system is essentially rectangular in shape—about 11 miles along the north-south axis and 6 miles wide. The steam-operated Turkey Creek Pumping Station with an installed capacity of 135 mgd is located near the northwest corner of the system and the electrically operated East Bottoms Pumping Station with an installed capacity of 60 mgd is located near the northeast corner of the system. These two pumping systems deliver water to the distribution system from ground-level reservoirs on their respective sites supplied from the main purification and pumping works on the opposite side of the Missouri River from Kansas City. The new trunk main extends from the Turkey Creek Pumping Station to another ground-level reservoir with a 10-mg capacity located near the center of the south end of the distribution rectangle. About 15% of the water that is delivered into the distribution system is sold along the three sides of the rectangle—the Missouri River constitutes the north boundary—to water companies and public water-supply districts for resale in areas outside Kansas City proper.



Three operations under way at once. An Insley backhoe does the trenching, a Lima Paymaster crane lays pipe, and a Hough payloader does the backfilling.

Without the new trunk main the distribution system has been able to sustain a maximum rate of about 135 mgd of which 120 mgd was supplied through the two main pumping stations, the remainder being supplied through a booster station taking suction from the 10-mgd reservoir in the south end of the system. The part of the distribution system that is served from this booster pumping station is set apart from the main distribution system by check valves when the booster station is in

operation. Operated in this way—filling the reservoir at night and pumping back into a part of the distribution system during periods of maximum demands—the ground-level reservoir and the booster pumping station serve as an effective equalizer of demands on the two main pumping stations.

With the new trunk main in operation the distribution system will be able to sustain a demand of about 175 mgd of which 20 mgd will be supplied from the booster pumping station.

City Purchases Materials

The pipe fittings and valves for the new main were purchased by Kansas City and their delivery was arranged for before the installation contract was made. In purchasing the pipe, the city took bids on steel-reinforced concrete pipe, on steel pipe with the provision that it would be concrete-lined in place, and on cast-iron pipe. Following is a tabulation of the three complete base bids received on February 11, 1947.

Steel reinforced concrete pipe—Lock Joint Pipe Co.	$709,774.50
Steel pipe — Bethlehem Steel Co.	779,563.10
Cast iron pipe—American Cast Iron Pipe Co.	801,195.37

The bid on steel-reinforced concrete pipe was a firm bid with delivery promised as follows:

48-inch pipe—Start: 185 days; Complete: 275 days.
42-inch pipe—Start: 185 days; Complete: 275 days.
36-inch pipe—Start: 275 days; Complete: 365 days.

The bid on steel pipe included an escalator clause based on material and labor cost but with a 10% ceiling. Delivery was promised to start in 300 days (December 15, 1947) and to be completed in 400 days (March 15, 1948). A cement lining and corrosion protection for steel pipe was expected to add about $130,000 to the ultimate cost.

The bid on cast iron pipe was based on a price of $26.50 per ton f.o.b. Birmingham for No. 2 pig iron and a freight rate of $12.12 per ton for pipe delivered from Birmingham to Kansas City, with an escalator clause calling for a $2 per ton addition to pipe prices for each $1 increase in pig iron prices at time of shipment and a full adjustment of any freight increase. The cast iron pipe was promised for delivery between August 1, 1948, and November 30, 1948. By reason of an increase in May 1948, and three previous increases —two in 1947 and one in 1948—the price of pig iron had risen by that time to $39.38 per ton—$12.88 per ton above the $26.50 base price in the cast-iron pipe bid. In the same month the freight rate increased $2.80 per ton. On the basis of these prices—and neglecting for the moment an increase in pig iron cost that occurred shortly after the beginning of the promised delivery period—the escalator clause would have added $28.56 per ton to the cost of cast-iron pipe having a total weight of about 9,600 tons—$25.76 per ton increase based on the increase in the cost of pig iron and $2.80 per ton for the increase in freight costs. On the tonnage of pipe involved, this increased cost would have been $274,176. The $91,416 difference in the base bids for steel-reinforced concrete pipe and cast iron pipe was increased by $25,866 by the city's consulting engineers to allow for the added cost of laying cast iron pipe. The total of these differences between the cost of steel-reinforced concrete pipe and cast-iron pipe was $392,282. By reason of an increase of $4 per ton for No. 2 pig iron on August 6, 1948—just six days after delivery was promised to begin—this difference would have been increased $8 per ton for all pipe shipped after the date of the increase. Assuming even deliveries throughout the promised delivery period, this last increase in pig iron cost would have added about $73,000 more to the final cost of cast iron pipe.

In other words, the steel-reinforced concrete pipe cost was $709,779. Cast iron pipe would have cost $1,102,061 on the basis of pig iron prices prevailing between May and August, 1948, or $1,175,061 on the basis of pig iron prices prevailing through all but a small part of the promised delivery period. With the cement mortar lining and the cost of corrosion protection but without the 10% escalation, steel pipe, it was estimated by the city's engineers, would have cost $908,597.

Summary

The total cost of the trunk main as evidenced by the base bids for materials and installation is shown in the following summary:

Pipe and fittings — Lock Joint Pipe Co.	$709,779.00
Cone valves — S. Morgan Smith Co.	90,913.00
Auxiliary pipe and fittings	26,674.00
Installation—Samuel Kraus Co., Inc.	1,423,957.00
Total	$2,251,323.00

The plan and specifications for the new trunk main were prepared by the Burns & McDonnell Engineering Company of Kansas City, Mo. The contractor's work in the installation of the new main was supervised by the Engineering Division of Kansas City's Water Department under the direction of James B. Ramsey, Chief Engineer and Superintendent.

A portion of the line went under a railroad yard. In the foreground is a shaft and one end of a 60-inch jacket pipe that was pushed by hydraulic jacks. The water pipe is laid inside the jacket pipe.

Punched Card Billing Has Unique Folio Method

"We are thoroughly sold on punched-card use for utilities, to render accurate and up-to-the-minute reports, and are proud of our reputation of being one of the 'pioneers' in adopting punched-card principles in the field."*

By J. W. KRUSE
Business Manager
City Water & Light Department
Lincoln, Nebr.

BEFORE converting to the punched-card system of utility billing, all customer address plates were re-cut and a unique customer folio number was developed. Normally a re-folio process must be made at least every three to seven years. The type of customer folio number used by Lincoln, Nebr., has eliminated this.

For years the city has been divided into three districts for both water and light billing, as follows:

-N-

-E- A DISTRICT B DISTRICT C DISTRICT -W-

-S-

In "A" District, all numbered streets were assigned 100 numbers; thus, North 10th Street would be listed as 110, North 40th Street as 140, etc. All alphabetical streets were assigned, on a three-skip number basis, 200 and 300 numbers. For example, Adams Street was numbered 201; Apple Street, 204; Avery Street, 207, etc. This skip numbering permits the insertion of new streets in case new additions are created and new streets are established. From these primary numbers the customer's house number is affixed, thereby making the complete folio number. For example, John Jones lives at 1645 North 40th Street. His customer folio would be 140-1645. 1649 North 49th would be 149-1649; 2901 Apple Street would be 204-2901, etc.

In "B" District, the numbered streets were assigned 400 numbers, and the named streets in this same area were assigned 500 and 600 numbers for the primary folio number. To these were affixed the customer's house number to complete the folio number.

In "C" District, the numbered streets were assigned 700 numbers, and the named streets were assigned 800 and 900 numbers.

Where more than one customer is rendered a billing for a particular address, such as apartment houses, a suffix is added to indicate apartment number. For example, let us assume there are ten individual billings rendered to apartment tenants at 1645 North 40th Street. These would be folioed 140-1645-01; 140-1645-02; 140-1645-03, etc., to indicate the customer lives in Apartment 1, 2 or 3; A, B or C; 101, 102 or 103, or any other system of apartment numbering at 1645 North 40th Street. Ninety-nine individual bills or accounts could be assigned under any

* The City of Lincoln, Nebraska, has had ten years' experience with punched card accounting. How the tax work is handled was described by Theodore H. Berg, Director of Accounts and Finance, in THE AMERICAN CITY for April 1940.

Of the plant pictured above, the author says: "Our plant grounds consists of approximately five acres, exclusive of our well area. In maintaining this much ground we utilize one Allis-Chalmers Model B Industrial Tractor Mower with a five-foot center bar; one Whirlwind Power Lawn Mower, Model S.P.; one Jacobsen 4-Acre Real Mower; one 16-inch hand mower; one Allis-Chalmers W-Speed Patrol with V plow. We use the same equipment to maintain two miles of road and most of the surrounding area to our well grounds, located six miles from the filter plant and pumping station."

particular address, ample for every circumstance.

From this brief explanation I believe you can see that when a new house is built the house number assigned would automatically fit into a "slot" in our folio account number system. Too, when additions are created, through the original skip numbering of alphabetical streets, a number can be assigned that also readily fits into the system.

In ten years' experience here in Lincoln—a city that has grown tremendously, with many real-estate additions created in this length of time, every situation has been handled smoothly. Many other additions can be created with new street names, and assignment of folio numbers will be just as easily handled. We have had no re-folio process and expect none for some years.

Our customer-accounting procedure, using the Remington Rand punched-card system, is equally simple. The punched-card equipment being of the numeric type, a Model 1900 Addressograph is used for addressing customer bills and other accounting procedures. A step-by-step sequence is, briefly, as follows:

1. The meter readers' route books are checked and consumption is checked manually.

2. Prior to billing customer accounts, the previous month's billing cards are run through a Multi-Control Reproducing Punch, and a new set of billing cards is made in which the customer folio number, the present meter reading (which is transferred to the "previous" meter reading), and rate class are punched automatically. These are set aside for use the following month, inserting in their proper place, before use, any new accounts established since the last billing period.

3. After the meter route books have been computed as listed in Step 1 above, the billing cards made in Step 2 are used in which the present reading and consumption are punched, automatically listed on the tabulator, showing totals for each meter route book. The listing is balanced to the route book for proof.

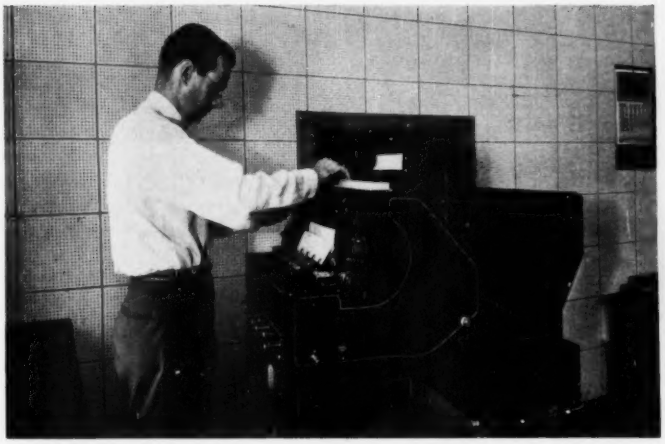
4. Next, the cards are sorted into rate groups—residential, non-residential, commercial, etc.—at the rate of 25,200 cards per hour.

5. Each rate group is then sorted into consumption groups and automatically extended by machine.

6. Cards are automatically tabulated by rate classification to produce a revenue register.

7. Arrears cards are automatically punched from the previous month's unpaid cards, and sorted with current billing cards by folio number. The cards are then run through the tabulator, which automatically prepares the customers' statements on pre-addressed forms.

8. The same cards are re-run on the tabulator to produce a billing register. Then the cards are addressed with customer name, street, and folio numbers, and placed in the accounts-receivable file until payment is received.



The tabulator, which produces a revenue register and prepares customers' statements, with a typical bill carrying both water and electric charges.

9. When payment is made by the customer, the card is pulled from the file and punched with date paid. Paid cards are listed daily on the tabulator for a journal of cash received, and the same cards are also used to prepare a customer-history record. Following the tenth of the month, all unpaid cards are listed on the tabulator. From this listing a courtesy notice of delinquency is prepared and mailed to the customer.

Advantages of This Procedure

In the procedure above only one manual operation is performed—the punching of the present meter reading and consumption figures. Each successive step is handled automatically on the equipment. Also in the re-use of the original cards, numerous reports are prepared as described. Furthermore, the same cards can be used for rate studies and statistical analysis.

Cost and general accounting in the Water and Light Department are by the same double-entry accounting system used by business firms. Labor, material, and equipment are charged to the respective departments and jobs on which they are used. The work goes quickly with punched-card methods. These methods provide complete control over all costs; and, because of the flexibility of the punched-card system, enable the officials to analyze exact cost distribution in any way desired. A general ledger in report form is prepared and maintained from the punched cards.

Fred G. Heuchling Leaves Chicago Park District To Open Public Relations Office

AFTER 24 years of service to Chicago's parks, Fred G. Heuchling resigned in April as Director of Public Information for the Chicago Park District to establish his own office as public relations counsel to public and private agencies. His new office is located in Room 1305, 116 South Michigan Avenue, Chicago 3, Ill.

At present Mr. Heuchling is continuing as director of promotion for Park and Recreation Week, May 21-30, 1949, and as executive secretary of the Chicago Horticultural Society. He was the principal collaborator with editors of THE AMERICAN CITY in the initiation and production of a number of the feature articles on parks and recreation published in the April issue.

Mr. Heuchling installed one of the first complete civil-service systems in this country in the former West Chicago Park System, and after a number of years in financial public relations, returned to park service, where he assisted in setting up the organization and administrative procedures for the Chicago Park District when it took over the functions of the 22 superseded park systems in that city in 1934.

During World War II, Mr. Heuchling organized and handled the administration of the victory-garden development in the Chicago area, which recruited over 100,000 amateur gardeners who raised crops on the city's vacant lots.

He is a past president and now a director of the Publicity Club of Chicago and a graduate in Chemical Engineering of the Illinois Institute of Technology.

Ten Years of Soil-Cement Paving

History of this type of paving in Alexandria, Va., shows it to be economical and durable

By C. L. WATKINS
City Engineer
Alexandria, Va.

HISTORICAL ALEXANDRIA, Va., (population 24,149, 1940 census), situated within sight of the nation's capital, has never been afraid to be first. Appropriately then, it is not so surprising that it should be among the pioneers in economical, durable street construction.

For it was in our two-century-old Northeastern Virginia city that the first soil-cement street in the "Old Dominion" state was built. That occurred in 1939. On March 20, 1940, the *Alexandria Gazette*, when reporting the condition of Alexandria's streets after the severe winter of 1939-40, singled out the block-long, soil-cement Bruce Street for editorial discussion. The newspaper's reporter chose to refer to it as the "Bruce Street Experiment." He described it in these words:

"The single block on Bruce Street came through one of the severest winters of the past decade without so much as a single surface break, while virtually every other secondary street in the city suffered heavily from weather conditions. . . ."

That reporter's frank appraisal of the then less-than-one-year-old soil-cement street has been amply confirmed by almost ten years of added service. Our records indicate that there has been virtually no maintenance on the base, although the light surface asphalt top has been replaced or repaired.

Beyond Experimental Stage

While soil-cement was relatively new for city-street paving, it was by no means an untried, unheard-of method. By 1939, soil-cement was certainly beyond the experimental stage, for it had been used extensively by the South Carolina Highway Department. As a matter of fact, soil-cement highways constructed there in 1935 are still rendering extraordinary service, with a minimum of maintenance.

This experience of the South Carolina Highway Department appears to be almost identical to ours. Since Bruce Street was built in 1939, Alexandria's engineering department, utilizing city forces exclusively, has placed well over 125,000 square yards of soil-cement base.

An eminent endurance record, coupled with a minimum of maintenance, has prompted me to advocate to officials of our city that soil-cement processing be considered a capital improvement. In my opinion its use is a major and permanent asset to our city.

What is soil-cement paving? Essentially the operation involves mixing of native roadbed soils or imported materials with a predetermined amount of portland cement to produce a durable, all-weather base. The amount of cement to be added usually ranges from 8 to 12% by volume and may be accurately determined through simple tests.

In my nearly decade-long association with soil-cement paving I have found construction methods to be both direct

One block of soil-cement paving on Bruce Street convinced Alexandria of its economy and its sturdiness.

Quiet residential areas like this one get low-cost paving and have virtually had "no-cost" maintenance since 1941.

and speedy. Our first step consists of scarifying the existing street to a depth of 6 inches. We then pulverize the scarified material with offset disk harrows, and follow this operation by applying predetermined amounts of portland cement. The cement and pulverized earth are thoroughly mixed with disk harrows, a cultivator, and gang plow. Necessary water is then added and uniformly compounded with the soil and cement, using the same equipment that performed the earlier operation.

Compaction is accomplished with a sheep's-foot roller (double drum) compacting the mixture to a required uniform density. A motor grader shapes the section to crown and grade, and a spike-toothed harrow scratches out top compaction planes. Finishing is completed with a 6- to 8-ton tandem smooth-wheel roller (6-ton weight when empty; 8-ton weight when filled with water) to give a smooth surface.

All our soil-cement streets are constructed by this standard, mixed-in-place method.

Types of Soil

The types of soils prevalent on Alexandria's streets are: (1) gravelly clay loams, (2) gravelly sandy loams, (3) sandy loams, and (4) clay loams. With these soils, we mixed cement in proportions varying from 10 to 12% by volume (.45 to .54 bag per square yard of pavement), with the maximum of 12% being applied where soils had a heavy clay content.

On all streets paved since 1939, the cement and soil mixture has been compacted to optimum moisture as determined by field laboratory tests. A uniform compacted depth of 6 inches was obtained in the finished base.

A bituminous plant-mix top was placed on all completed soil-cement streets. We discovered that by planning our projects we could conveniently top all the soil-cement bases in one operation. Soil-cement streets are opened to traffic within one or two days after processing, and the bituminous surface may be applied months later if necessary.

This factor is a singular advantage, particularly in city street improvements, where closing of streets not only creates a serious traffic problem, but is extremely troublesome to the motorists.

Our choice of soil-cement is, therefore, predicated on two very important factors—economy and durability. The initial cost of a durable, all-weather soil-cement base is economical. Its durability is attested to by its record of low maintenance after nearly ten years of constant traffic.

Soil-cement construction for light-traffic city streets seems to be one of the answers to Alexandria's paving problems.

A sheep's-foot roller produces a uniform density in the pavement.

This motor patrol brings the street to a true grade.

A steel-tired roller knits the surface down.

Improvements at Flint, Mich., provide more capacity and bring the water to the plant at the right pH for effective treatment

The Flint plant. Note the changes in architectural style as plant enlargements were constructed.

Enough Water—*of the Right Type*

IF A suit of clothes is to be comfortable, it should be tailored to fit the particular and personal needs of whoever wears it. And if a superintendent of water supply is to remain comfortable, he should supervise a plant tailored to meet exactly the water-supply and distribution needs of the particular locality using it.

In Flint, Mich., Water Superintendent Earl Holloway, and his assistant, Herschel Self, are gradually becoming more comfortable in their tasks of supplying water to the people and industries of this important manufacturing city. The reason is that his water-works system is being fitted to a new distribution pumping station, improved filtering and softening facilities, and eventually a large storage dam and reservoir.

Flint's existing plant draws from the Flint River that has a minimum reliable summer flow of 18,000,000 gallons per day. With the aid of the existing Kearsley impounding reservoir that holds some 650,000,000 gallons, the minimum available summer flow may be equalized to an average of 33,000,000 gallons per day.

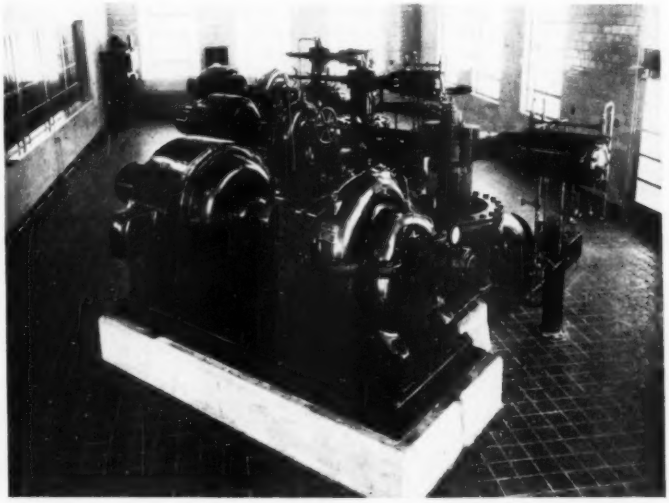
Need for Improvement

However, this won't take care of the water demands of Flint. In 1950, which practically means today, the city will need an average 35 mgd. And this is enough over the top 33 mgd rated plant flow to make Messrs. Holloway and Self feel comfortable during the beautiful Michigan summer days.

In 1946, to be more specific, the water department saw the use of water increase by 40% and stay there. Normally, the city would increase its use of water by ½ mgd per year. This shows why the city had to take action immediately.

Part of the action is that of fitting the water-works facilities to a new reservoir. Its site is being selected on the basis of aerial survey and other studies. It will contain more than 1,850,000,000 gallons and will provide an equalized flow of at least 46,000,000 gallons daily, or enough to allow the water department to enjoy more fully the beauty of the warm comfort of a Michigan summer.

This new reservoir will provide other desirable features also. The river sup-



Three new pumps in the Schwartz Creek station help solve distribution problems.

ply is "flashy." It varies widely in chemical and organic content, in turbidity, color, and temperature. This new reservoir will level off some of the peaks in the flash characteristics and will make life more livable for the filter plant operator.

Present Plant Facilities

The present water-works system consists of a plant that softens, purifies, and pumps the supply to a distribution system of more than 410 miles of mains. These mains vary in size from 4 to 30 inches.

The plant has two intakes, two pumping stations, a softening plant, a filter plant and clear-water storage. The plant "grew"—built in installments over several decades. The intakes were built in 1913 and 1917. The existing pumping units were installed from 1919 to 1931. The filter plant was constructed in three steps: eight filters in 1911, eight in 1917, and twelve in 1923. Each has a nominal rated capacity of 1,000,000 gallons daily. The softening feature was added in 1939. Today, pumping, softening, and filtering are all short. In order to ease over the summer peak, the city had to limit lawn sprinkling in 1947 to the afternoon and evening hours.

The present plant makes the most of its facilities to provide up-to-date treatment. Superintendent Holloway was quick to recognize the value of chlorine dioxide for treatment to control certain taste and odors that are difficult to handle by other means. Both a Lapp Pulsafeeder pump and a Proportioneers pump are used to handle the sodium chlorite solution that produces the chlorine dioxide.

However, the new equipment will make the work more thorough. The new filters and flocculating and settling basins will add 25% to the plant's treatment capacity; and the new 10,000,000-gallon storage reservoir, together with its supplementary mains and pumps, will add 50% to the peak-hour capacity of the distribution system.

Distribution System

The first improvement is a new distribution reservoir and pumping station. The new 10,000,000-gallon reservoir is divided into two parts so that it can be cleaned without being dewatered completely. Bristol recording instruments measure the elevation in the reservoir in each section and Simplex venturi meters record the flow into and out of the reservoir. In the station there are one 15-mgd and two 10-mgd electrically powered De Laval pumps. The reservoir "floats in" with the load on the distribution system.

In the improved plant there are seven new filters all served by Simplex controllers. The building has been constructed so that 10 can be built if necessary.

An exterior view of the Schwartz Creek Station.

The plant handles lime, alum, and soda ash in the coagulation and softening process by using automatic Dracco equipment and Jeffrey bucket unloading equipment. In the coagulation room the new coagulation basins, Jeffrey equipped, are able to handle 15 mgd. The basins built in 1939 can receive 30 mgd.

For clarification, the plant departs from procedure followed in many of these Michigan cities, by using an outdoor, open Dorr clarifier. Despite the apparent danger of ice, the consulting engineers were convinced that it would not become troublesome. They felt that the velocity of the water over the wier at the rim will be great enough to prevent a complete freeze-up. If needed, the clarifier can be enclosed easily.

The sludge from the plant has a rather unusual use. The Water Department operates both the water and sewerage service. So Superintendent Holloway frequently uses the sludge from the water settling tanks to correct the pH of the sewage going to the Imhoff tanks.

Better Treatment Afforded

The revised plant will give the operators the opportunity to use the important and useful process of superchlorination in its most effective way for the first time. It has been well established by now that you need less chlorine to produce a free residual if the water is at a fairly low pH. The most favorable pH condition exists just as the water is received raw from the river. Consequently, a new single intake has been erected, anticipating the abandonment of the two older ones. The intake brings the water to a chlorine contact chamber, where enough chlorine will be added to produce a free residual, and the residual will be in contact for at least 15 minutes. After this contact, which should be sufficient to produce the sterilization required, the water then proceeds through the balance of the treatment processes. Superintendent Holloway and his staff gave some study to the possibility of reclaiming the lime sludge, but because of the character of the river water, this seems to be impractical at the present time.

Peak Demands Can Be Met

Consequently, with the new plant facilities of filters, softening equipment along with the new reservoir, distribution pumping station, and storage reservoir, Superintendent Holloway and his assistant, Herschel Self, can begin to see that the water supply is adequate to fit the needs of the city.

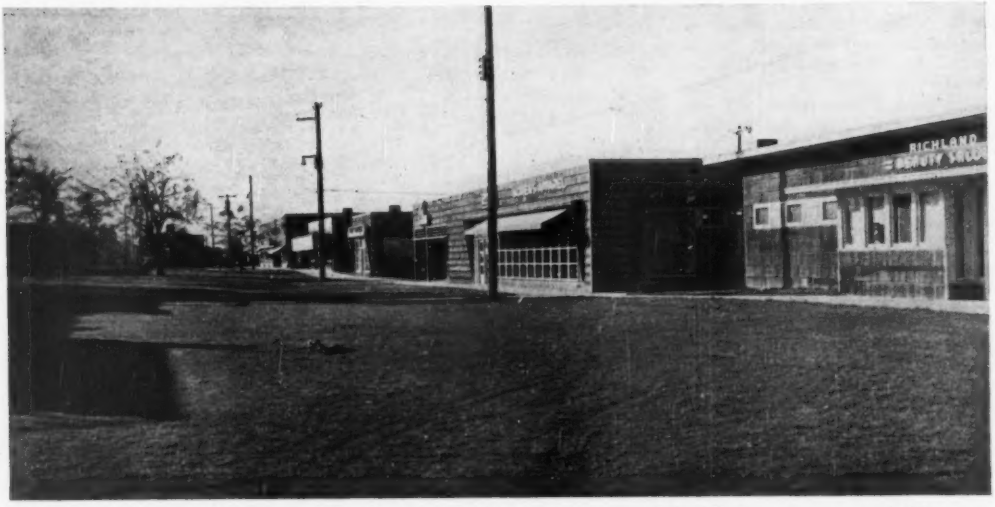
And with these needs solidly in hand, they are looking forward to enjoying the Michigan summer without worrying about whether the peak demands are going to punch holes in the plant's supply system.

International Housing and Town Planning Federation Moves to The Hague

PERMANENT headquarters of the International Federation for Housing and Town Planning will be transferred in the near future to The Hague, Netherlands, from London, the bureau of the organization has announced. Temporary headquarters of the organization were set up in London in 1940 when the German army invaded Belgium.

Dr. Alexander van der Weijde, executive director of the Netherlands Institute for Housing and Town Planning, will serve as secretary general to the Federation when its headquarters are moved. Offices of the organization will be housed in a building with those of the International Union of Local Authorities and the Union of Netherlands Municipalities. Common services will be shared among the organizations at The Hague as they were in Brussels before the war when the IULA and the Federation were headquartered together.

Amsterdam was selected as the site of the Federation's next Congress, to be held in September 1950. The American Society of Planning Officials and the American Institute of Planners are contributing members of the International Federation.



Richland's first commercial center, "The Greenway," which is being expanded. All stores are surrounded by grass, and face this green, with off-street parking at the rear. A modernized central commercial center is also being built.

Richland, Wash., Plans for Growth

City will be permanent community for atomic-energy workers

GREAT changes are being made by man along the power-laden Columbia River in the Pacific Northwest, but probably the most amazing development is in the Richland area of southeastern Washington.

Less than a decade ago, neighborly talk along the 12-mile stretch of river road from tiny Richland to the twin towns of Pasco-Kennewick was about truck garden crops, orchards, and vineyards. Today, oldtimers can hardly keep up with reports of new houses going up in blocks of 1,000, superhighways, new bridges, and business projects in the million-dollar brackets.

The hub of all this feverish activity is Hanford Works, vast Atomic Energy Commission domain inside a sharp bend of the Columbia. It takes thousands of workers to operate the spectacular plants that began producing plutonium in wartime. Additional thousands now are engaged in enlarging and improving the existing plants and building new facilities for more efficient and cheaper production. Most of these workers and their families came from outside the Tri-City area. That meant additional houses by the thousands and soon.

In 1940, Richland saw little reason why it should ever grow much beyond its village population of less than 300. This year, it is approaching 25,000 residents. During the past year about 2,000 housing units have been completed and there still is a long list of homeseekers. The new dwelling units range from one-bedroom apartments to four-bedroom houses. Another 500 multiple-housing units are considered for this year. Even after they are completed, Richland anticipates it still will have a shortage.

Kennewick and Pasco Have Problems Too

Ten miles down the river, Kennewick suddenly found itself bulging at its seams, so it recently extended its city limits to take in fringes thickly populated with new residents. Similar to Richland's experience, the Kennewick population zoomed from about 2,500 in 1940 to an estimated 12,000. Many of the newcomers are employed at Hanford Works, but can't find places to live on the project.

It's the same story at Pasco, a mile across the Columbia. Earlier in the century, Pasco had considered itself almost entirely dependent on a substantial payroll from Northern Pacific Railway Company shops and train crews. When part of the railroad work was moved to other points, Pasco gave more concern to the agricultural developments of its surrounding semi-desert country. Water on the soil was all that was needed to make Pasco grow, advised its civic leaders.

Then bingo! There was the war, bringing a big naval air station into Pasco's environs and the mysterious construction job that was employing many thousands about 35 miles up the river, at once-tranquil little Hanford.

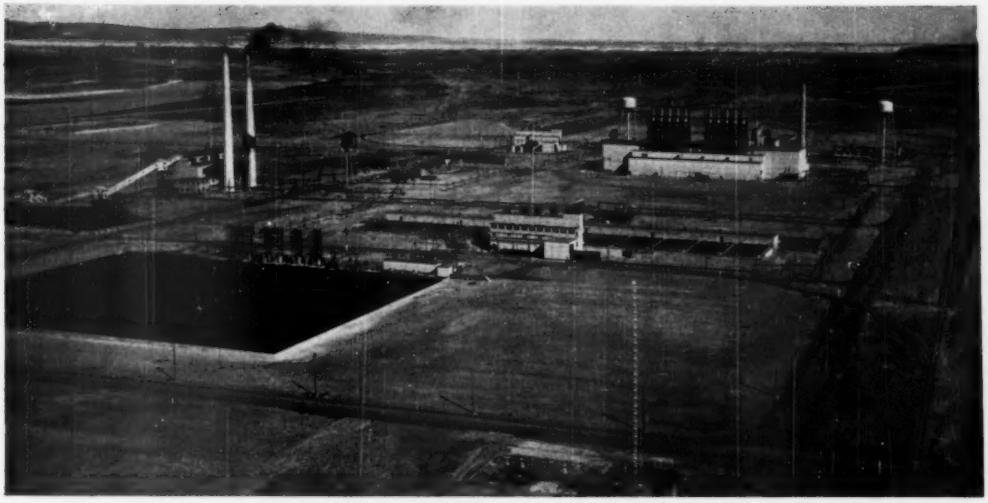
Right then, Pasco found itself short of houses and never has been able to catch up. A population of 3,500 found housing easy before the boom came in 1942. A common remark now is, "We don't even know how many people there are in Pasco." Even conservative outsiders estimate that the total must be nearly 12,000.

Another factor in Pasco's growth is the building of McNary Dam, 40 miles down the river. Of prime consideration also is the Columbia Basin Irrigation Project with Pasco clinging to its southern leg.

Workers Moved from Hanford

What happened at old Hanford is history, but the impact of those turbulent years from 1942 to 1946 continues to be felt downstream in the Tri-City area. Hanford as a community in itself has come and gone. From a village of about 500 population, it spread out over sagebrush and sand until 51,000 persons were housed in tarpaper barracks and 4,200 trailers at peak construction of the atomic plants. Suddenly they were all gone.

When the plants began operation in 1944, Hanford's residents were moved outside the barricades. Many settled



One of the operating areas at Hanford Works which General Electric operates for the Atomic Energy Commission. All such areas at this project are within a barricaded portion of a 631-square-mile Government reservation.

in Richland, 25 miles away, which became the residential and administrative center of the project. Others who remained to help operate the plants after construction was finished established permanent homes in nearby Benton City, Prosser, Grandview, and Sunnyside, in addition to those who chose to live in Kennewick and Pasco.

Old Hanford became even less than a ghost town when all its people moved away and the remaining buildings were razed or finally transported to North Richland, construction camp for the present expansion. It became virtually "no town."

School Districts Recieve Aid

The Atomic Energy Commission has assumed responsibility for what it considers its share of the strain that has been put on neighboring communities of Richland. For educational facilities especially, the AEC has dug deep to give financial assistance.

By authority of the Atomic Energy Act of 1946, the AEC is allowed to aid school districts where the welfare of Hanford employees' families is concerned. As a result, more than $1,000,000 is being allocated during the current school year for various types of assistance to off-project districts. In this sum are cash payments to help educate children of Hanford workers, loan of school buses, additional classroom facilities, and even cafeteria equipment.

The most outstanding example of the project's effect on increased school enrollment is at Kennewick, where 949 pupils were reported for the 1941-42 year. This year's total is about 3,200 children enrolled.

Water and sewer systems engineered to serve 1940 populations also have become entirely inadequate to serve the growth of the entire area.

Adequate school buildings for children living in Richland are a direct responsibility of the AEC. Its prime contractor, General Electric Company, has charge of supplying and maintaining school buildings and coordinating their use at night by non-school groups. A new junior high school and one grade school were opened during the present school year. They augment a senior high school and five grade schools, including one in North Richland. Another junior high school has been approved for construction this year.

Richland schools are operated by a regular school district under supervision of the State Department of Education. The teachers are paid by the district. Although the AEC does not operate the school system, it gives financial assistance because there is no tax base in the city.

When the two A-bombs were dropped on Japan in 1945, Richland had about 15,000 population. In the following two years its residents decreased by some 2,000. Then came the start of expansion in the summer of 1947.

Acute Need For Commercial Facilities

Next to housing, the most acute immediate need was more commercial facilities. Commercial operators and their families are included — with the employees of the AEC, General Electric, and certain subcontractors — as being eligible for housing. Former employees are not permitted to retain their housing units after they have severed their connection with the project.

The shortage of business firms still exists, although steps are being taken to bring in more commercial outlets. A new business site now is being developed less than a mile from the present commercial area and awards already have been made to a number of concerns. Many more new ventures are being invited to help round out the facilities for Richland shoppers.

In stressing the need for more commercial establishments in Richland, a comparison is made with Walla Walla, a city of comparable size 60 miles away, which has ten times more business firms.

There has been a definite change in business operation of the community since the first days of the project. When Richland was taken over in 1943 as a government community, all new buildings, even churches, were erected and maintained by the Manhattan Engineer District, through its prime contractor, E. I. duPont de Nemours & Co.

Applicants for new business ventures now are being encouraged to erect and maintain their own buildings, but all within the framework of a master plan developed by General Electric's Community Management Division. This is in line with the Atomic Energy Commission's policy to make Richland as near as possible to a modern and normal American community. The first step in this direction was taken early last year when religious groups were given permission to build and maintain their own churches and schools. Two denominations now are completing their

own edifices and others are planning similar building programs.

Plans for community development also include additional neighborhood shopping centers as needed in residential areas and a light industrial area. Up-to-date layouts for these areas, to be surrounded by grass greenbelts, provide for ample parking space.

Rentals paid by business firms are comparable to rents charged in cities of similar size. They cover costs of electricity, water, sewerage, such municipal expenses as police and fire protection and street maintenance, and a fair return for use of the land on a government reservation. No municipal taxes are levied, but the usual county, state and federal taxes apply in Richland as elsewhere.

Applications for new business developments are considered by the Commercial Facilities Division of G. E. in Richland, and referred to the AEC for final approval. Those selected are granted long-term leases with permission to construct approved business structures. Complete information as to how one goes about starting a new business is available by writing or personally contacting the Commercial Facilities Division, General Electric Company, Richland, Wash.

In addition to newcomers in Richland's business circle, a number of establishments that have been there for several years are keeping in step with the expansion program by remodeling and enlarging their stores at their own expense.

One Industry—Plutonium Production

At present Richland is entirely a one-industry community, with all efforts focused on the production of plutonium. This man-made metal is produced by the transmutation of uranium in the Hanford reactors. Besides being used in bombs, plutonium also has peacetime applications that are being developed in research laboratories.

What the future holds for diversification of Richland's industrial life is far more than can be answered at present. The answer eventually may be found in the achievements of atomic energy research during the next few decades. It is not too fantastic to foresee startling possibilities when one recalls that less than 10 years ago Richland and Hanford were sleepy farming villages intent on little beyond getting water to their fields and orchards sloping back from the Columbia.

Until about a year ago, Richland's local government bore little resemblance to normal municipal operation. It was strictly under the paternalistic jurisdiction of the AEC and prime contractor. Residents had no outlet to voice their opinions except through community management executives for the government and G. E.

The first step away from this form of government was appointment of a community manager, E. L. Richmond, with functions similar to those of city managers in normal municipalities. Late in 1948, Richlanders were granted another step toward normalcy when an election was held to select a nine-man community council. First action of the new council, which has advisory powers only, was election of a mayor, John S. Crowder, who works in the Hanford operations area.

Council action on behalf of the residents is passed along in an advisory capacity to the community manager. If it is a matter that requires top-level consideration, the final decision is made by Fred C. Schlemmer, manager of Hanford Operations Office for the AEC, and George R. Prout, general manager of the G. E. Nucleonics Department.

Whether Richland will ever be incorporated is still very much in the talking stage. One of the first considerations is whether the people themselves want to make a definite change from their present way of life. So far they are free of many of the local decisions that must be decided by elections in normal communities. Another thing is that they do not have to pay direct taxes for street improvements, water mains, etc.

No resident of the city owns the house in which he lives. Everything is on a rental basis with Uncle Sam the landlord. However, there is a possibility that within a few years residents may be permitted to build their own homes on the project. Such action is now being considered by the AEC.

Residential zones feature grassy "inner-block areas," the inside areas of each city block, which are used for recreation. Trees are being planted throughout the village to form wind breaks for residential areas, and to aid in dust control.

Community recreational facilities include two theaters, playgrounds, a park, a stadium for athletic and community events, a large recreation hall, and the Desert Inn, a hotel overlooking the Columbia River, which was formerly known as the "Transient Quarters."

Twenty-three church organizations serve the town, and a weekly newspaper helps to foster interest in community affairs and activities. An extensive public-health program and a modern, well-equipped, and well-staffed hospital guard the health of the community.

As far as personal freedom is concerned, residents of the community are free to come and go as they please. The city has no gates; neither has North Richland, four miles away.

All of the 600 square miles of the Hanford project are not wide open to all comers. In fact, more than half of the reservation is inside barricades that are closed to everyone who does not have an authorized pass.

It has become almost second nature for employees to show their passes during daily routine, and they do so with a certain amount of pride. There is the satisfaction of knowing that a pass, with its identifying photograph, is visible proof that the bearer has been thoroughly investigated and found trustworthy of sharing in this country's secret atomic energy development.

New York Removes Advertising Signs From State Highway Property

AFTER striving for years to keep advertising signs from state-highway property, the New York State Department of Public Works has initiated a vigorous sign-removal program in Erie County. Under the direction of Charles R. Waters, District Engineer in charge of the Department's District Office at Buffalo, this program is well advanced and work will continue until every state highway in Erie, Niagara, Chautauqua, and Cattaraugus Counties is devoid of advertising signs within the highway right-of-way limits. Bertram D. Tallamy, New York State Superintendent of Public Works, has announced that similar sign-removing programs are proceeding in all other parts of the state.

The first phase of this program in Erie County started at Williamsville and proceeded for 15 miles east along Main Street (Route 5) to the Genessee County line. In this section alone a total of 125 signs that were partly or entirely on the highway right-of-way have been relocated by their owners and 35 others have been removed. The few remaining signs will be removed very shortly by state maintenance forces.

This heavily traveled highway no longer has advertising signs encroaching close to the pavement. By clearing the signs from its entire 99-foot right-of-way width, the road now has its true appearance of a wide, safe, important highway, rather than the congested "sign alley" that it formerly had been.

Sign-removal work is now progressing along Route 5 from Buffalo to Williamsville. The next work on the program will concentrate along the Niagara Falls Boulevard (Routes 18 and 62) from Niagara Falls to Buffalo.

Generally an effort is made by the state, whenever possible, to notify sign owners and grant them a limited time to move their signs. It is illegal to have any kind of advertising sign partly or entirely on state property.

See also "Public Roadside-Control Efforts attacked by Billboard Interests," by Albert S. Bard, on page 109 of this issue.

Oregon Recommends

Curb-and-Gutter Standards

League of Oregon Cities analyzes curb-and-gutter design practices throughout the state to establish the present standards

By J. W. BARNEY*
City Manager
Hillsboro, Ore.

THE curb defines the edge of the street. The gutter drains the street. Often curbs set too low virtually disappear when additional surfacing has been added to streets. Curbs set too high make it impossible to open car doors on the curb side. Intersections installed without proper rounding of the curb at the corners make it more difficult for traffic to execute turning movements. Inadequate thought in laying out gutters result in poor water flow.

Purpose of Curbs and Gutters

By defining the edge of the street, the curb provides a barrier to keep automobiles on the road. If this barrier is not adequate, people will drive off the roadway, particularly when parking or when entering driveways. The shape of the curb should be based on the anticipated development and use of the roadway, as well as on considerations of strength and stability.

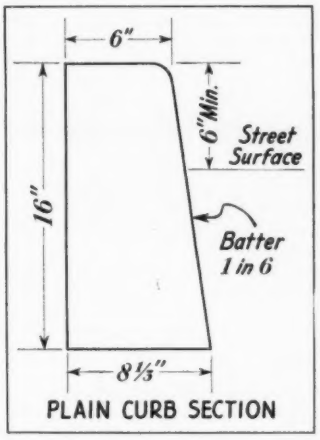
Streets are built with a crown so that water will run to the sides. The curb at the edge of the street intercepts this water and confines it to the gutter. Basically, the gutter itself serves only this one function of providing drainage. Except in areas subject to heavy flash floods, the height of curb necessary to provide a barrier to traffic will be more than adequate to confine the water in the gutter, provided proper outlets for the water are installed.

Types of Sections

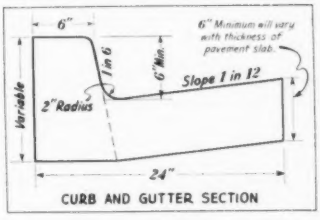
There are two general methods of constructing curbs. One is to make the curb section entirely independent, and the other is to construct the curb and gutter as one monolithic section. The decision as to which of these to use will depend largely upon personal opinion as influenced by local conditions.

For plain curb sections the dimensions recommended are a 6-inch top and a 16-inch depth. The street face of the curb is to have a batter of 1 inch in 6 inches with the batter carried to the base of the curb to provide sufficient base width for insuring stability of the curb.

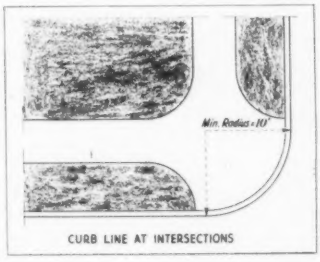
More depth of curb may be required in certain locations to insure solid bearing. In other cases, where the curb rests on solid rock, the curb height might be less than 16 inches, but in no case should the bottom of the curb be above the bottom of any road surfacing. The recommended curb exposure, that is, the height above the street surface, should be 6 to 8 inches with an absolute minimum of 5 inches, depending on the type of street surface and special conditions.



PLAIN CURB SECTION



CURB AND GUTTER SECTION



CURB LINE AT INTERSECTIONS

Where a street is constructed of and maintained with macadam, sufficient curb height should be provided to allow for at least a 2-inch bituminous surfacing without reducing the curb exposure to less than 6 inches above the finished pavement. Where a pavement is to be completed at the time the curb is constructed, as in portland cement concrete or heavy asphaltic concrete paving, a 7-inch curb height is recommended to allow for one resurfacing application without reducing the curb exposure to less than 6 inches.

The top of the curb on the street face should be rounded. This may be accomplished through the use of an ordinary edging tool. Regardless of how the rounding is accomplished, a maximum radius of 1 inch is recommended.

Curb-and-Gutter Section

For a curb-and-gutter section, it is recommended that the portion above the street surface be the same as for the plain curb section. The gutter slab should have a 24-inch width measured from the back of the curb to the face of the slab. The total height of the curb should be sufficient to allow for the curb exposure plus at least a 6-inch slab. Heavier slabs may be necessary. This will have to be determined by the engineer on the job. In any event, the slab should be at least as thick as the pavement. Approximately a 2-inch radius should be used between the slab and curb section to provide ease in cleaning. The slope of the gutter slab should be 1 inch in 12 inches.

The control of expansion and contraction resulting from changes in temperature can be provided by cutting into the curb or curb-and-gutter every 15 feet and inserting a piece of 3/16-inch premolded expansion paper or

* Mr. Barney is chairman of the committee appointed by the League of Oregon Cities to develop uniform specifications and to investigate the use of standard forms in small cities.

other suitable material. This will prevent cracks and allow for movement due to temperature change. Where the section concerned parallels concrete paving, the joints should correspond with the construction joints in the pavement. The need for slip dowels at joints in the curb-and-gutter section should be determined by the engineer in charge. Normally, slip dowels will not be required in the plain curb section.

The curb radius at intersections will depend largely upon the relative importance of pedestrian traffic and vehicular traffic at the intersection concerned. From the standpoint of safety to the pedestrian, a short radius will reduce the speed of vehicles and require the vehicle to approach the pedestrian more from the side. On the other hand, a larger radius will ease the flow of traffic around the corner. Buses and trucks, particularly, find it difficult to get around sharp corners. Curb radii at intersections now in use vary from practically zero to 20 feet or even greater. The general tendency is to do away with very sharp corners. Consideration of these factors suggests that a minimum radius of 10 feet will probably meet most requirements.

Regardless of any standards that are suggested for curbs and gutters, there will be many instances requiring special design to meet special conditions in any city. These standards are suggested as a basic pattern subject to modification for special conditions.

This article is based on the report and recommendations of the following committee appointed by the League of Oregon Cities to develop uniform curb-and-gutter specifications and to investigate the use of standard forms in small cities: J. W. Barney, City Manager, Hillsboro, chairman; Vernon Thorpe, City Superintendent, Medford; J. H. Davis, City Engineer, Salem; V. L. Goodnight, City Engineer, Corvallis; Ben S. Morrow, City Engineer, Portland; David C. Slaght, City Engineer, St. Helens; L. G. Apperson, Assistant City Engineer, Portland; Ivan Waterman, Associate Professor of Civil Engineering, Oregon State College; Virgil O'Neil, Assistant Office Engineer, Oregon State Highway Department; Oliver C. Jessup, Contractors Equipment Corporation, and Arnold M. Westling, Public Works Consultant, Bureau of Municipal Research and Service, University of Oregon.

Syracuse Smoke-Control Program Passes First Year

By NELSON PITTS
City Engineer
Syracuse, N. Y.

PROBABLY the one function of the Engineering Department that actively affects and interests the public most is that of smoke abatement. The Division of Smoke and Air Pollution Control for Syracuse was created late in 1947 after smoke abatement had been placed under the jurisdiction of the City Engineer. The Smoke Ordinance became law on March 3 of last year. This ordinance, based on that used in St. Louis, embodies four important features:

1. General control of the emission of dense smoke.
2. Regulation of the sale and use of high volatile bituminous coal.
3. Control of alterations to existing fuel-burning equipment and the installation of new equipment.
4. Regulation of smoke emission by railroad equipment.

The ordinance allows nine minutes of smoke of #2 density as measured by the Ringelmann Chart, and six minutes of smoke greater than this density, in any one hour. This allows cleaning of fires or building new fires. All other emissions of dense smoke are prohibited.

High-Volatile Coal Control

All authorities agree that it is impossible to hand-fire high-volatile coal without producing dense smoke. Our ordinance prohibits hand-firing this type of coal, and requires that a permit be obtained from the department for using such coal in mechanical fuel-burning equipment. Furthermore, the ordinance makes it illegal for a coal dealer to sell this coal to anyone not having a permit to use it.

Our ordinance also includes certain regulations which must be followed in the installation of fuel-burning equipment fired by bituminous coal or oil. We do not, at the present time, control installations for anthracite coal, coke, or gas.

Regulations for railroad operations permit one continuous minute of dense smoke, but in any event, not more than one minute in any 15-minute period. The use of high-volatile coal in railroad locomotives for yard and switching operations is also prohibited.

How Enforced

If a violator makes no effort to correct conditions after he has received three official notices, he is summoned to a show-cause hearing before the City Engineer. If no corrective measures are taken within 10 days after the hearing, the engineer shall institute court proceedings to invoke the penalties of the law. If found guilty, the violator is subject to a fine not to exceed $100 or imprisonment for not more than 30 days, or both, for each violation.

Our belief is that we are making definite progress. As the heating season was drawing to a close last year, we began making observations of buildings which were emitting smoke, supplementing our observations with photographs of violating stacks. Owners were notified and requested to remedy the conditions. As of February 1 of this year we had made approximately 3,000 observations and had sent out 250 notices. Since our program has been in effect, many violators have installed new equipment. Others have changed to a different type of fuel, or have improved their plant operation in other ways in order to conform to our new requirements. As a result, there has been considerable reduction in smoke densities, and it is estimated that during our first year of smoke abatement the number of frequent violators had been reduced 90%.

Railroad Compliance

While we believe it possible for railroads to conform to our smoke-emission requirements, we also bear in mind that with the type of coal-fired locomotive now used, it is impossible to eliminate completely the emission of fly ash. The solution must await development of improved coal-fired locomotives or conversion to diesel equipment. At present the railroads are converting to diesel equipment as fast as it becomes available.

There seems to be a growing belief among Syracusans that no smoke should issue from stacks. This is a mistake. We are not attempting to eliminate smoke, but rather to reduce it to limits that make the smoke neither a nuisance nor a public health hazard. Complete elimination is impossible if the boilers and other equipment are to operate. That is why we have permissive smoke-emission time periods for the purpose of cleaning fires and building new fires.

There is no magic that can accomplish smoke abatement. Rather we must realize that it is a task requiring education, patience and time, and one which must have public cooperation as well as financial support.

Orlando Corrects Sub-Surface Water Pollution

Sixteen-mgd sewage-treatment plant at Orlando, Fla., integrates sewerage system and ends objectionable sewer-well use — at a cost below engineer's estimate

FLORIDA generally has found itself subjected to criticism by one of the popular national magazines, because of the polluted and unclean condition of its coastal waters and inland streams. In contrast, Orlando, Fla., has been enjoying creditable attention by the sanitary engineering profession in its new sewerage program that will eliminate this sanitation problem.

The new plant, able to handle a flow of 16 mgd, takes out of action 11 small septic tanks that had been discharging into leaching wells.

Leaching Wells Overloaded

Orlando's sewerage problems have been coming to the fore for many years. In 1913 the first small Imhoff tank made its appearance. Later other localized septic tanks were built, able to give only superficial treatment. Florida's State Health Department watched these developments, and when the population using the sewers increased, they strongly urged more modern sewerage. Finally, after an exhaustive survey and inspection of the system, the health officials delivered an ultimatum forbidding the city to dig any additional drainage wells and protesting against their present use.

This presented the facts plainly to the city administration. They realized that constructive action had to be taken for the protection of their own health and means of livelihood, if for no other reason. Their first step was to retain the firm of Smith and Gillespie, of Jacksonville, Fla., known for its enterprising work in the municipal sanitation field, to design and supervise the construction of a plant that would correct this condition.

The plant they designed not only met the requirements of sound engineering practice, but in addition attracted attention as one of the few built in recent years that is being constructed at a cost equal to or less than the original engineering estimate. Smith and Gillespie engineers placed the construction figure at $3,500,000. Actual contract costs are running from $150,000 to $300,000 under this estimate. This places the Orlando cost per capita at about $12, or less than half that frequently encountered on projects of a comparable size.

This does not mean that the new plant skimps on the treatment it provides. As indicated previously, the sewage is fairly strong. It contains a BOD count of 350 ppm and includes considerable industrial waste. The plant uses primary clarification and two-stage high-rate trickling filters to furnish a thorough degree of purification.

Pumping Station

Actually, the first phase of the treatment occurs in the three-lift stations that deliver the sewage to the plant. At each station is a Chicago Pump Company comminutor that macerates the large particles and thereby makes flow easier. Also at each lift station is a Wallace and Tiernan chlorinator that applies chlorine and prevents the formation of odor nuisances.

The three lift stations and the booster station are equipped with three pumps each. These vary in size from 800 to 1,750 gpm and pump against heads ranging from 45 to 65 feet. The booster station has two pumps capable of pumping 4,000 gpm and one able to pump 2,000 gpm, each against 50- to 60-foot heads. All pumps are Yeomans Brothers Series 6,250 dry-pit pumps. The small pump in each station is driven by a Reliance electric motor. The two large pumps are dual driven by electric motors for normal operation or by gasoline engines for emergencies. Two of the stations have Buda engines; the other two use Chrysler Industrials. Operation of standby engines is entirely automatic in the event of electric power failure.

The plant uses Dorr Company Sifeed clarifiers to provide primary settling. These are 120 feet in diameter and have an 11-foot side water depth. The clarifier mechanism is center-drive type and has the Dorr Type RF skimmers.

For subsequent treatment, the plant uses high-rate trickling filters 120 feet in diameter and with a 5-foot media depth for both primary and secondary filters. The distributors are the Dorr Company Type KC. Secondary settling tanks are similar to those used for primary settling except that they have a 9-foot side-wall depth and have no skimmers.

The plant uses two sludge-digestion tanks, each 75 feet in diameter and having a 23-foot side-water depth. Heating is by circulation through a heat exchanger outside the digesters. Heat from the gas-diesel-engine jacket-cooling water is used to heat the sludge. The digesters have floating covers. All digester and gas-utilization equipment is by the Pacific Flush Tank Company. Gas-utilization equipment includes an automatically operated compressor to compress surplus gas for high-pressure storage and thus provide a continuous supply of gas, regardless of fluctuation in gas production by the digesters.

The gas engine is a dual-fuel engine, type ENB-6 of the Cooper Bessemer Corporation, and can operate on either diesel oil or sewage digester gas. The engine drives a 125-kw Ideal Electric generator which provides for all electric-power requirements in the plant.

To recirculate the sewage in the plant, vertical-type mixed-flow Fairbanks-Morse pumps are provided. Primary recirculation pumps are 3,500 gpm at 16-foot head; secondary recirculation pumps are 2,800 gpm at 15-foot head. Chlorination is provided for pre- or post-application with Wallace and Tiernan equipment. Republic flow meters record the flows through the plant.

To pay for this new improvement, the city has established a utility tax, drawing 10% of the monthly telephone, gas, light, and water bills. These funds are expected to pay for the improvement and remove pollution that has threatened the economic life of this city.

A drawing of how Orlando's new sewage-treatment plant will look completed.

To Aid in Rebuilding German Cities

AN AMERICAN PROBLEM AND OPPORTUNITY

Results of Allied bombardment of Cologne, Germany, viewed from tower of the famous Cologne Cathedral.

THE United States, through an Act of Congress, is committed under the European Recovery Program to aid in the recovery and rehabilitation of Europe, as a result of World War II.

If, as former Secretary of State Marshall stated, "Germany is the keystone of the European nations," then it should logically follow that the rehabilitation of Germany should be given serious attention.

Former President Herbert Hoover, in his Report to the President, after his economic survey of Germany, stated that:

"The productivity of Europe cannot be restored without the restoration of Germany as a contributor of that productivity. . . . If Western civilization is to survive in Europe, it must also survive in Germany. And it must be built into a cooperative member of that civilization. That, indeed, is the hope of any lasting peace. After all, our flag flies over those people. That flag means something besides military power."

The American people are greatly interested in the results of Western European recovery, for it is their tax money our government is spending. In the case of Germany, we have a definite obligation as victor and conqueror. Our interests in Germany are threefold: moral, humanitarian, and financial.

The following figures, obtained through authoritative sources in Germany, will show the gigantic scale of

By SIEGFRIED GOETZE*

destruction of German cities and housing facilities through aerial bombardment. This includes places of worship, hospitals, schools, places of culture and monuments, etc.

Cities Heavily Damaged or Destroyed

No accurate picture of the degree of destruction of German cities can be given until a complete physical survey of the entire occupied German territory, including the Russian zone, has been made. But enough information is on hand, obtained through a general survey and local spot surveys, to state that more than half of all of the German cities show more than 50% of heavy damage and destruction; in some cases up to 75% and 90%, as in the case of Koblenz, Hanau, Mainz, Kassel, Wuerzburg, and Gelsenkirchen in the Ruhr.

Percentage of Destruction

Of Germany's most important cities and housing centers, the 41 more than 50% destroyed or heavily damaged are: Berlin, Hamburg, Kiel, Wilhelmshafen, Luebeck, Bremen, Emden, Rheine, Osnabrueck, Hannover, Muenster, Magdeburg, Halberstadt, Frankfurt-Oder, Essen, Duesseldorf, Koeln, Aachen, Paderborn, Soest, Kassel, Dresden, Giessen, Koblenz, Frankfurt-Main, Hanau, Bingen, Mainz, Offenbach, Darmstadt, Wuerzburg, Nuernberg, Heilbronn, Stuttgart, Ulm, Freiburg and Friedrichshafen; together with the Ruhr cities of Gelsenkirchen, Duisburg, Hagen and Remscheid.

For a complete breakdown of the destruction of one of these cities, let us take the case of Hamburg, world-renowned Hanseatic Port, known to every American who sailed through this gateway to Germany. Here are the official figures, with no mention of damage to industrial, commercial, and agricultural buildings.

Housing Losses

A survey made by the local authorities in May 1939 in Hamburg lists the buildings then used for housing as 119,989 with 552,484 housing units. In the survey of May 1945, it is shown that only 79,586 buildings were left standing; and of these 34,857 are still damaged. In other words, 42% of all housing units were either heavily damaged or totally destroyed.

Churches. Of the existing places of worship, numbering 205, only 57 remained undamaged or showed little

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* Author of this article, Siegfried Goetze, formerly of Los Angeles, Calif., is the founder of American Aid to Rebuild German Cities, Inc. Mr. Goetze was active in Los Angeles in city planning, housing, and civic work from the inception of the movement there in 1913. Now a farm owner at Monrovia, Md., he spends most of his time in Washington, D. C., to aid rehabilitation in Europe.

damage. 148 were damaged and 75 totally destroyed.

Hospitals. Of the existing 94 hospitals, only 21 remained undamaged or lightly damaged; 73 were damaged and 17 totally destroyed. Buildings within hospital grounds: of a total of 704, only 171 remained undamaged; 533 buildings were damaged and 192 totally destroyed.

Schools. Of 451 Hamburg schools, 167 show no consequential damage; 284 were damaged and 97 totally destroyed.

Libraries, Theaters, Museums, etc. Of 137 buildings, only 13 show light or no damage; 144 were damaged with 38 totally destroyed.

Historical Buildings and Monuments. Of 128 such buildings and monuments, only 48 show light or no damage, with 56 totally destroyed.

The above are official figures and could well apply to other German cities listed above.

What the war damage in the City of Hamburg alone would mean in reconstruction terms would be hard to estimate. An approximate total summary, given me by Hamburg's officials, shows that 448,776 housing units would have to be built or undergo extensive repairs. The costs, as estimated by city authorities, would be approximately 5,250,000,000 marks, or about $1,250,000,000 American dollars; a sum more than the entire allocation to Germany under the Marshall Plan.

It would stagger one's imagination to have to add to this the cost of repairing war damages of the other 40 German cities.

Little Progress Thus Far

During his recent visit to this country, Mayor Ernst Reuther of Berlin told a group of us at a dinner given by Mayor Kennelley in Chicago that the only progress toward reconstruction in Berlin has been the gathering of some 8,000,000 bricks from bombed-out buildings, and the clearing of the rubble, done almost bare-handed by Berlin's men and women.

Reports from the U. S. Military Government in Germany reveal that little rebuilding is being done there, except for some commercial buildings and places of amusement. It is explained that the high rate of interest prevents building other than those structures showing a high rate of return.

According to the British Control Office for Germany, it may require a hundred years to replace the damaged buildings and meet the new requirements at the present rate of construction in the British zone, which is the most damaged and most populous of all zones of occupation.

The German housing situation has been greatly aggravated by the influx of some 12,000,000 people driven from their ancestral homes in Eastern Germany. In one state alone, Wuertenberg-Baden, 700,000 such refugees have been added to the normal population of 3,100,000, an increase of 22.6%. In that state 300,000 housing units for 1,500,000 people are needed.

Germany needs building materials, much of which she imported from the U. S. before the war.

Germany needs financial assistance which Congress would have to authorize through long-term loans through Federal Loan Agencies and private banks.

But, Germany needs, first of all, moral support.

To help the German people to help themselves, a national committee—American Aid to Rebuild German Cities, Inc., a non-profit organization, has recently been formed with headquarters in New Jersey and active committees in New York, Philadelphia, Chicago and Washington.†

In a recent statement by Mr. Fleckenstein, the national secretary, about the aims of the organization, he declared:

"Obviously charity alone cannot rebuild the German cities, nor even the greater part of them. The major share of the work must be done on a commercial basis. However, through our organization we hope to start the ball rolling. This calls for a program of public education as to the importance to current world affairs of German rebuilding and how it vitally affects our responsibilities as Americans; the erection of American Friendship Houses amidst the ruins of German cities; cooperation with German town planners and housing authorities; some material assistance to public and private rebuilding in Germany; and eventually some definite contribution toward the erection of a system to facilitate the flow of American investment capital for German rebuilding which would work on a self-liquidating basis."

A drive is now under way to organize American support for these efforts. A National Conference on American Aid to Rebuild German Cities will be held in Washington, D. C., at the Washington Hotel on May 31, to which all interested are cordially invited.

Invitations are being sent to members of Congress, government officials, leaders of commerce and industry, city planners, architects and engineers, as well as to visiting German planning officials to attend.

America cannot plan a stable future without a stable Europe, and there cannot be a European recovery without a German recovery. There must be an early end to the mass misery of millions of people living in rubble, economically paralyzed and not permitted the means of their own rehabilitation.

Life can never be normal where people have no roofs over their heads, where they must live in cellars of destroyed buildings, makeshift shelters, and caves. It is generally accepted that before Europe can recover, some semblance of normal conditions must return to Germany. That country is today an experimental laboratory where the present state of transition provides an opportunity for political thinkers, social workers, jurists, architects, and town planners and other professional groups the world over to give practical application to a wide range of ideas in these various fields. To set in motion the rebuilding of destroyed cities in the heart of Europe is the aim of American Aid to Rebuild German Cities, Inc., a non-profit corporation with branches now beginning to function in New York, New Jersey, Philadelphia, Chicago, and Washington, D. C.

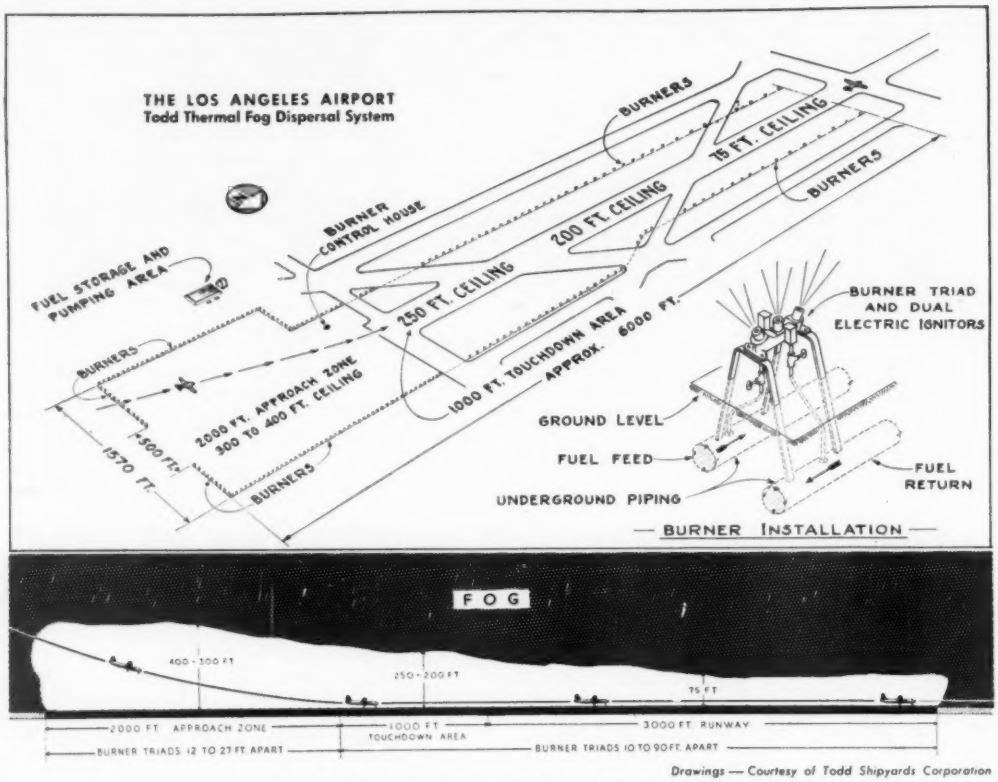
† The officers are: Rev. William Mager, D.D., president; Mr. Goetze, executive vice-president; Herman Witte, vice-president; Edward A. Fleckenstein, secretary and general counsel, and Elmer E. Heinel, treasurer. Address of the secretary is 39 King Ave., Weehawken, N. J.

New Cornell Planning Course

A NEW four-year course of study leading to the degree of Bachelor of Science in land planning will be introduced next fall in the College of Architecture at Cornell University in place of the five-year course in landscape architecture, which will be discontinued.

The program is designed primarily as a preparatory course for post-graduate specialization in landscape architecture or city and regional planning. Upon completion of the land planning curriculum, the student may continue in the Graduate School as a candidate for the degree of Master of Landscape Architecture or Master of Regional Planning.

Los Angeles Gets FIDO



Drawings — Courtesy of Todd Shipyards Corporation

A sketch showing how the burners will clear the Los Angeles airfield.

First commercial airport uses fog-dispersal system to achieve weather-free landings

By W. N. BEADLE
Vice-President
Byron Jackson Co.
Los Angeles, Calif.

LOS ANGELES, Calif. (population estimated at 2,000,000), likes to be proud of its sunshine, but at the same time, the Department of Airports and the airlines do not like to take chances with fog. Hence we see the airport, together with the airlines, putting into use the first commercial fog-dispersal system in the country. The new system went through a successful test last February and had a public demonstration a few weeks later.

The Los Angeles airport, giving air service to this area for the past 20 years, ranks today as the fourth busiest air terminal in the United States. It represents a $25,000,000 investment with runway facilities 6,000 feet long.

The Airport Thermal Fog Dispersal System is the civilian name for FIDO, army parlance for "Fog, Intensive Dispersal Of." It is a British-developed system for rolling back the mists that clouded the embattled isle during the war. Although the original FIDO was costly, it brought in nearly 2,500 aircraft that otherwise would have crash-landed. The commercial use was developed by the Todd Shipyards Corporation of New York. The City of Los Angeles combined with the CAA to finance the $842,000 improvement project under the Federal Airport Act. However, the five major airlines serving Los Angeles have underwritten the operating cost and maintenance, and have contracted with the Department of Airports to amortize the city's capital expenditure over a 5-year period.

The installation is designed to produce ceiling heights as follows:

400 to 300 feet in the 2,000-foot approach zone.
250 feet in the 1,000-foot "touchdown" zone.
200 feet to 75 feet in the 3,000 feet of remaining runway.

Visibility Improvement

This fog-eater will boost 75-foot ceilings to 300 feet, and will push visibility of three-eighths miles into more than three-quarters of a mile in two minutes at a cost of $75 to $80 per landing. A 50-passenger airplane can probably "FIDO" into the Los Angeles Airport for about $1.50 per passenger. This compares to from $8 to $10 per pas-

senger if the airplane has an alternate field operation at Palmdale, on the desert 100 miles northeast of Los Angeles, where most commercial airlines heretofore have had to land during periods of low fog in the Los Angeles area.

New Aviation Terms

The thermal-fog-dispersal system gives the aviation industry some new terms. One is "triad." These are frames erected 14 inches above the ground, carrying three Todd "jet-atomizer" nozzles. They control the combustion of cheap diesel fuel under pressure of not less than 1,000 pounds per square inch. The triads are connected with underground pipe that lead to two oil storage tanks situated in a remote area, holding nearly 130,000 gallons of fuel each.

There are 392 of these triads. They parallel both sides of the main east-west runway and approach zone for 6,000 feet.

The Todd jet-atomizers are ignited instantaneously by centralized control from a control booth through electrical dual igniters on the frame holding the triads. The design of the atomizing element is such that the rate of output in gallons of fuel can be varied by controlling the pressure in the return line without affecting the quality of atomization and without changing the oil-supply pressure. The angle of flame in the Todd atomizer is almost constant over the entire range of fuel output. Burners can be immediately shut off to eliminate drip and to assure minimum required operation.

The intense controlled heat generated by the Todd jet-atomizer nozzles raises the saturation point of the atmosphere to absorb water vapor over and in the immediate vicinity of the runway. The highest concentration of heat is in the approach zone where a ceiling of 400 feet will be developed. The heat concentration is reduced along the runway so that a ceiling varying from 250 feet in the touchdown zone to 75 feet is produced at the west end of the runway.

No Danger to Planes

Burning lines parallel both sides of the main runway for 4,000 feet and then fan out into the approach zone for 2,000 feet where they "hook" left and right to form burning patterns which take full advantage of wind drift normally associated with fog. Safety of airplane operations is assured by the wide separation of burning lines, ranging from 400 feet to 870 feet from the center of the runway.

Glare walls have been built on all highways where necessary, to avoid startling passing motorists. The entire system is fenced and service roads have been built to aid in maintenance.

Fuel for the Todd Fog Dispersal System is delivered from the storage tanks by the Byron Jackson centrifugal pumps, each capable of delivering 1,100 gallons of oil per minute at a discharge pressure of 1,200 pounds per square inch. Each of the two pumps is fitted with a 1,000-hp electric motor capable of varying discharge of oil from full capacity down to 35 gallons per minute.

First of Five Navigation Aids

According to Colonels Young and Read of the CAA, the installation at the Los Angeles Airport is the first of five navigation aids to be installed this spring and summer to guard airline safety and improve air-transportation schedule-regularity. They are:

1. High-intensity (100,000-beam candlepower) elevated runway lights with five steps of brilliancy control, operated from the Civil Aeronautic Administration control tower at the airport to augment the FIDO installation. They will replace the present lighting system.

2. Installation of the slope-line system by the CAA, consisting of two lines of lights extending for 3,000 feet on either side of the approach zone. Each line of lights will have 30 units and every unit will contain 200-watt lamps giving maximum intensity of 2,000 watts per unit. Automatic visual direction is given a pilot so that as long as he remains in true glide path, the lines of light converge on the point of contact with the runway. If the pilot veers from the true glide path, a geometric pattern of the slope-line system is presented in individual bars of light pointed in the proper direction to return the aircraft to the correct course.

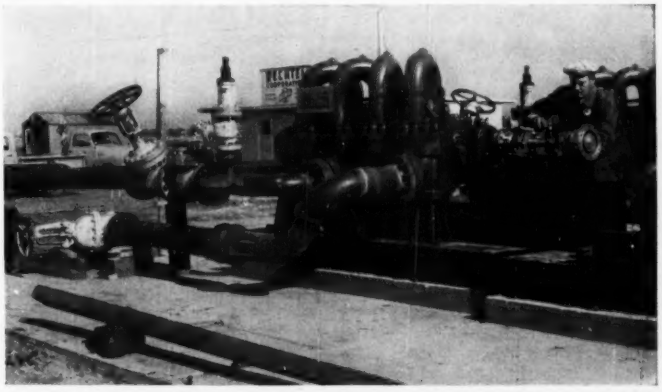
3. Installation of airport-surveillance radar by the CAA which will furnish a viewing scope in the airport-traffic control tower, giving a picture of all aircraft flying within the approach area.

4. Installation of precision-approach radar by the CAA which gives operators in the airport-traffic control tower a picture of all aircraft as they make their final approach for a landing in the approach zone, the true glide path and runway course, and pick up aircraft in the last stage of landing. Use of the airport-surveillance radar and precision-approach radar will give CAA controllers detailed information of aircraft as they enter the approach area and move into the approach zone. Controllers will observe whether aircraft are proceeding under previously announced flight plans; if not, immediate steps can be taken to avoid confusion and delay in issuing proper instructions.

Other Landing Aids

It was pointed out that the thermal fog-dispersal system and the radar and electronics equipment are all units of a complete system and complement each other. With their coordinated use at the Los Angeles Airport in 1949, pilots and airport traffic controllers will increase airlines' schedule dependability. Cross checks by the different navigation systems will insure utmost safety and provide full confidence to pilots and ground personnel.

Already installed and operating are the instrument-landing system, the neon-approach-light lane, and the airport-traffic control tower. Secondary aids for landing are both low-frequency and very-high-frequency radio-range facilities operated from an airway communications station on the airport. The radio ranges guide aircraft to the vicinity of the airport, and from them proper courses are laid out for a transition to the actual landing approach on the instrument landing system.



One of the Byron Jackson pumps used in the FIDO installation. This will deliver 1,100 gallons per minute at 1,200 pounds-per-square-inch pressure.

Municipal Public Relations

The City Tells Its Story

By HENRY DAVIS NADIG, *Director of Public Relations, New York Regional Plan Association*

Using Newspapers for Publishing Your Annual Municipal Report

ALTHOUGH few cities as yet have sparked to the idea of publishing the annual municipal report as an integral part of one or more editions of the local press, this form of presenting a printed report seems bound to spread during the coming years.

Wichita, Kans., set the pace with its 1947 story * in eight-page tabloid sections of the two local papers in February 1948. (I understand that San Jose, Calif., has also circulated its annual report as a part of the local press, although no copy of this has been received).

Now (for the 1948 municipal year) City Manager M. P. Jones of Wichita has done it again, apparently even more successfully than a year ago. And this time THE AMERICAN CITY is covering the Wichita report in a little more detail than before through a guest article which you see on the facing page.

* See THE AMERICAN CITY, April 1948, page 101.

Typical page of Las Vegas 1948 Annual Report.

The desire to build strong human appeal into all reports is a major plank in City Manager Jones' municipal-reporting platform. Despite the emphasis on human appeal, he insists that all speeches, articles, reports, etc., also do a good job of "telling the story."

Mr. Jones, whose *Accounting Procedure Manual* won him the coveted Louisville award in 1947, believes that adequate reporting is a responsibility of government. "Citizens pay for their government," he said recently, "and they deserve to know what they are getting for their money.

"That's one reason we like the Sunday supplement annual report. It reaches the greatest possible number of people at a minimum of cost. And if public response is any criterion, it's pretty obvious that the majority of the readers were thorough in reading our annual report.

"Our plans for the coming year? The same general technique in municipal reporting . . . only more of it."

Las Vegas: Full-Size Newspaper

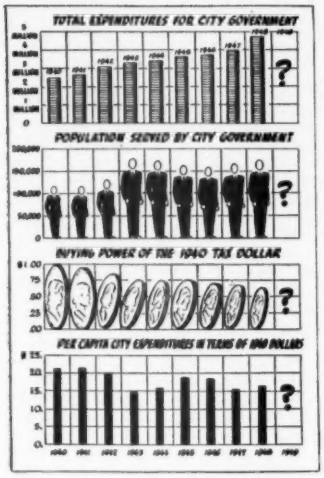
Fresh from Las Vegas, Nev., has come the most ambitious example of this type of annual reporting yet to come across my desk. City Manager J. M. Murphy has wrapped up the Las Vegas accounting in 24 full-size newspaper pages. It was distributed as part of the *Review-Journal & Age* of January 16.

Titled "City Manager's First Annual Report," it is an extremely able presentation. As you can imagine, photographs and charts are in abundance, and they are judiciously apportioned on the pages. This first report by City Manager Murphy contains a history of Las Vegas, which seems a highly appropriate part of the contents. Each municipal department receives adequate treatment in word and picture, and graphic charts serve to tell the story with additional effectiveness.

The compiling and production of the Las Vegas report—which in itself is more than normal size for some small city dailies—was done by skilled hands, and City Manager Murphy gives credit where it is due both for makeup and writing.

Use of the press for publishing the annual report is practical and good

(*Continued on page* 177)


TOTAL EXPENDITURES FOR CITY GOVERNMENT
POPULATION SERVED BY CITY GOVERNMENT
BUYING POWER OF THE 1940 TAX DOLLAR
PER CAPITA CITY EXPENDITURES IN TERMS OF 1940 DOLLARS

One of the graphs done by Mark E. Keane, assistant to the City Manager.

City Government at Sunday Breakfast

By PAUL DANNELLEY
Research Aide
Wichita, Kans.

RESIDENTS of Wichita, Kans., first read a newspaper annual report of their city government over Sunday morning coffee a year ago.

They liked it, liked it a lot.

Hundreds of letters, postcards and telephone calls convinced city officials that here, at last, was a type of government reporting that people would *read*.

By telling its 1947 story in eight-page tabloid supplements carried in the two local daily newspapers, the City of Wichita had pioneered in municipal reporting. Results were so gratifying that City Manager M. P. Jones determined then and there to develop the new technique still further.

The result? . . . the fourth Sunday in February once again found Wichitans reading a magazine section city report. And this time it was a report even more readable, even more interesting, than the year before.

The report reflects the city's over-all attitude in presenting its story to citizens. Government in Wichita is an open book. Citizens are invited to learn about any and every phase of city government activity. Through press and radio releases, speeches, forums, literature, and other types of municipal reporting, the city strives to reach the greatest possible number of people with government detail presented in an interesting way.

The Report's Presentation

The 1948 annual report, as usual, was presented to citizens as a public service by the city's five-man Board of City Commissioners.

Space costs for the two supplements were comparable to printing costs for the conventional booklet-type municipal report. The total circulation, however, was about 16 times as large, with copies reaching 115,000 individuals or families.

Title of the Sunday supplement appearing in *The Wichita Eagle* this year was "Progress in Silhouette"; that of *The Wichita Beacon* supplement, "Forward with Wichita — 1948." Because there is some overlapping in circulation of the two newspapers, the two sections were prepared so they would be entirely different both in appearance and technique. There was little duplication in copy and only about 5% duplication in photographs.

● *"Progress in Silhouette"* is an attractive, illustrated eight-page magazine section. Column widths are varied and an interesting style of magazine make-up is employed. The title arises from the unusual cover illustration. Except for the standard newspaper flag at the top of the page, the entire cover is taken up by the photographic illustration. Main photograph is a sharp black-and-white time exposure taken the length of downtown Douglas Avenue after a rain at night. At the foot of the illustration is super-imposed a photograph of a five-year-old boy looking up and slightly back at a tower he has just built with his Erector set. Above the title, which is stripped in at the top of the illustration, is a line map of the city. Instead of streets and other detail inside, the map contains display copy concerning the city's growth during the year. While

City Manager Monty Jones holds a press conference on the 1948 annual report, showing page proofs to newspaper reporters. Left to right: Ted Hammer, *The Wichita Eagle*; Mark E. Keane, assistant to the City Manager; Mr. Jones, who meets with the press each week day morning, and Gil Rector, *Wichita Beacon*.

prepared for readability, this section is in a more contemplative vein for the leisurely reader.

● *"Forward with Wichita*—1948," on the other hand, employs standard newspaper tabloid make-up, with five newspaper columns on each page. Stories are short with standard newspaper headlines. Thus the hurried reader, despite a more or less cursory scanning, will more than likely acquire a great deal of information from it. The title springs from the cover illustration, likewise an all-over page, which consists of eight construction photographs in a sort of montage arrangement. An outline map of the city also appears on the cover.

Much Detail in Both Sections

While readability was a prime consideration in preparation of either section, both contain a tremendous amount of government detail.

Obviously there is considerable glamour surrounding certain government activities. Police, fire, and health activities always carry a certain amount of appeal for the public.

Last year, also, Wichita people spent $22,000,000 for residential and non-residential construction. This was an all-time record by 38%. The city paved 25 miles of streets for another record. Wichitans used more water than ever before. Sewer construction hit a record pace. Sewage-disposal-plant volumes showed all-time records toppling. Obviously such information has a great amount of popular appeal without special treatment.

But there are many less glamorous services which the citizen also deserves to know about. Considering what the taxpayer gets for his money, government is comparatively inexpensive. But how to bring this home to him in an understandable way, a way that he will remember?

For City Manager Jones and his research staff, headed by Mark E. Keane, assistant to the City Manager, this problem resulted in many conferences and long hours of research.

Standard Newspaper Cartoons Used

The standard newspaper cartoon was decided upon to help point out certain government costs. Three such cost cartoons and one statistical cartoon were prepared. One, depicting two convicts in a jail cell, captioned, "and then I pulled that job in Wichita," stated in cutlines that police services cost less than a penny a day per capita in Wichita. The others, equally light, served to drive home statistics and figures which the average reader might otherwise find burdensome.

The final pages of each section offered a projection of city activities, and explained what the continued growth would mean in terms of dollars and cents.

Treated also in text, the knotty job of justifying increased expenditures was handled in a four-part pictorial graph prepared by Mr. Keane. The top quarter employed stacks of dollars to show that city expenditures had virtually doubled since 1940. The second part showed the tremendous rise in population (55,000 since 1940) by using drawings of black-suited men of varied heights. The third quarter depicted the shrinking buying power of the tax dollar, and the fourth, in standard bar-graph technique, showed that per capita city expenditures would be under the 1940 figure were the buying power of the dollar the same.

Monthly Report System Speeds Publication

Wichita's last annual report in conventional booklet form—for the year 1946—left the presses late in March. Last year, in the initial try at a newspaper tabloid city annual report, publication occurred just 53 days after December 31, on the fourth Sunday in February. Publication on the comparable day in February this year was 58 days after the end of the year.

This speed of publication results from a combination of factors, but perhaps most important is the excellent system of monthly reporting by division and department heads in Wichita's city government. Every month the officials submit detailed statistical reports to the city manager. The reports review individual division or department activities statistically, and each is accompanied by a covering letter which interprets the statistical data.

Annual reporting for each division and department head is thus largely a job of compiling the monthly information into an over-all account. In preparation for the report to citizens this year, City Manager Monty Jones sent special letters to each department and division head concerning deadline dates for annual reports.

First reports were delivered to the city manager by January 10, and within three weeks every report had been delivered. Meanwhile each report was scrutinized carefully by the city manager and his staff, and the "news value" of various division and department activities was carefully weighed.

Photography a Year-Round Project

Photographic work for the annual report is in a sense a year-round project. The research division owns a 4-by-5 Speedgraphic with flash, and photographs are made as various seasonal activities occur. Taking of photographs is a part-time activity of Mrs. Laura Sherwood, who operates the city's microfilming equipment. Mrs. Sherwood also develops and prints the photographs in the police department's dark room. Plans are now under way to install dark-room facilities in the city building. The city also owns photo-flood equipment, and many unusual lighting effects are achieved in indoor pictures.

Obviously, as the year ended, a few specific photographs remained to be taken, but as a whole, the photographic job for the report was virtually completed.

Many photographs do double duty. Some, taken for newspaper release, are saved for the annual reports. Others, used for record purposes, likewise make good report material.

As much human interest as possible is worked into all photographs. Obviously some of the construction pictures are short on human interest, but in general they make up for it, if carefully planned, by appealing to the interest and intelligence of the reader. An attempt is made to have at least four pictures in the file for every one that is used in the annual report. In this way it is possible to choose only the most interesting photographs.

As department and division annual reports began to trickle into the city manager's office this year, the research staff was already busily engaged in culling out uninteresting pictures. Final choice of pictures for each activity was checked both with the city manager and with his administrative officials.

Firm layouts of each page were prepared. Copy was carefully figured to "fit." Photographs were cropped and scaled to size, then shown on the layouts.

Thus the final report layouts and copy were taken to the newspapers in "package" form. Careful planning at this stage helps hold down production costs.

For checking purposes, photographs, copy, cutlines, and headlines were clipped to each page. These were checked back first with department and division heads, then with the City Manager.

In this year's report, seven pages carried news, the front page being devoted to the cover illustration. Four pages were news pages, and three were "policy" pages. First policy page, on the inside front cover, was the City Commission page. Page three was the page for staff and administrative information, and page eight was a projection page, listing present and future problems and what the city plans to do about them.

Reports for both newspapers were staff-prepared, and at least one member of the research staff was on hand when each page was finally "made up" in the composing room. Good liaison between the research staff and all mechanical departments at the newspapers helped to insure a well-printed final report.

One thousand extra copies were printed by both newspapers. These are distributed to various organizations and many other municipalities. A considerable supply is also kept on hand for write-in orders, of which there are always several hundred.

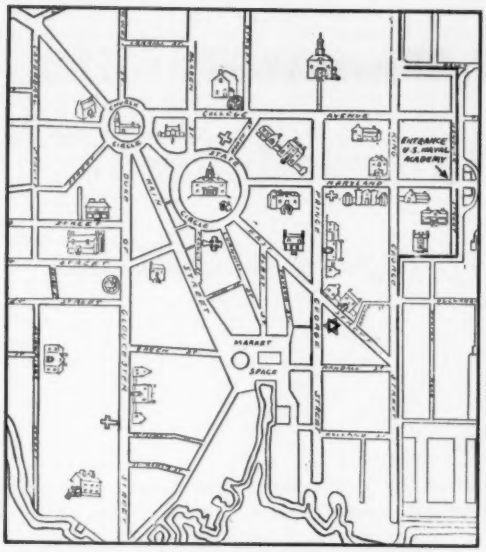
Persons wanting copies may so signify by writing Room 302, City Building, in Wichita.

Hartsdale, N. Y., Women Survey Recreation Needs

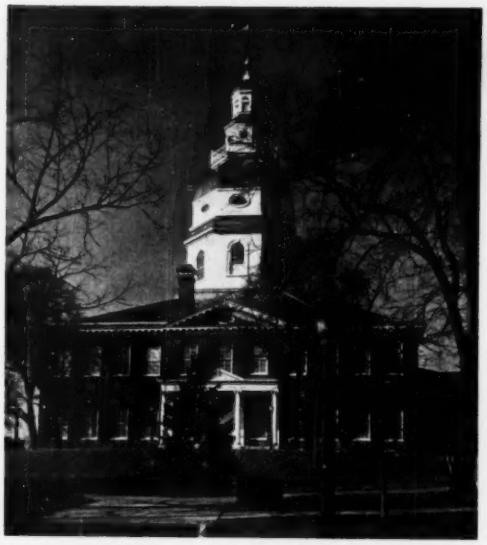
THE recreation needs of Hartsdale, N. Y., were determined in February by a house-to-house survey of 523 families representing about 50% of the total community. The survey was made by a committee of 45 members of the Hartsdale League of Women Voters, under the direction of Mrs. J. Ray Duncan, vice-president of the League. The 473 replies received revealed an emphasis on swimming as the kind of family recreation most desired.

Here are the answers showing the first preferences which were marked:

1.	Place for swimming	90
2.	Movies	66
3.	Family swimming	64
4.	More Teen-Age activity	59
5.	Bowling	41
6.	Ice skating	34
7.	Community House	33
8.	Library	26
9.	Playground for all ages	23
10.	Tennis	19
11.	Roller skating	18



This is a street layout of Colonial Annapolis. It is especially interesting to note the early use of traffic circles.



The cupola of the historic Maryland State Capitol is preserved exactly as it was built in the Colonial period.

Annapolis Celebrates 300th Birthday

By NORMAN DE WIND

AMERICAN city officials are forward-looking by profession. Their duties belong to today, tomorrow, and the future. An occasional backward glance, however, may reveal how staunch purpose was translated into forms worthy to stand forever.

Annapolis, capital city of Maryland, will take that backward glance from May 22 to 27, when it celebrates the Three-Hundredth Anniversary of the settlements that gave birth to the city. It was a small band of Puritans, under the protection of Maryland's famous Toleration Act of 1649, that came up Chesapeake Bay from southeastern Virginia and established their homes there.

City is in Colonial Setting

Before the end of the century, the principal settlement in the area, known by several names, was to become officially "Annapolis" in honor of the Princess Anne, later Queen Anne of England. In that period, also, it was to become a shipping center for tobacco, a port of entry, and the capital of the province, with free school, state house, and a city laid out with streets radiating from two central circles—an idea said to have inspired the later plan for the City of Washington. With these beginnings, Annapolis stands today as a city small but influential—a modern city in a colonial setting.

Annapolis is an educational center, not alone because of the United States Naval Academy, but also because of two museums, the Maryland Hall of Records, and St. John's College with its Great Books Program. The college grew from the early King William's School, and is, therefore, the third oldest educational institution in America.

Architecturally, the city is unique for the beauty and elegance of its colonial buildings and for the number of pre-Revolutionary survivals that serve vital purposes of everyday life—an apartment house, a hotel, a public library, a home for aged women, a home of the Redemptorist Fathers, a college building, headquarters of the County Board of Education, club houses, and offices. Atop State House Hill are the two oldest buildings now in use as the seat of present state government; the Maryland State House and the Old Treasury Building—the latter a little gem in the shape of a Greek cross.

It is not longevity alone that gives importance to the Maryland State House, for it was here in its Old Senate Chamber on December 23, 1783, that, by his resignation as Commander-in-Chief of the Continental Army before the Congress of the United States under the Confederation, General Washington set a precedent which has become a principle of our national life—the military authority as subordinate to the civil. Three weeks later, in this same building, was ratified the Treaty of Peace with Great Britain, marking the end of the Revolutionary War.

The week's program for the celebration is designed to reflect the many-sidedness of Annapolis today. Between the 21st and 25th of May, a dramatic and musical spectacle, with a cast of 700, will picture historical events during the 300 years. An exhibition, to begin with Indian artifacts, old utensils, toys and playthings, will show life past and present in Anne Arundel County. Exhibitions are also planned in the Maryland Hall of Records, the Naval Academy Museum, St. John's College, and in the Maryland State House.

One of the most notable exhibits will be a century of costumes and accessories (1800-1900). There will be ceremonies for the first day of issue of the Annapolis Tercentenary stamp, and parades of old vehicles, fire engines, and a 1903 Cadillac in perfect running condition. Thursday, May 26, will be Severn and Chesapeake Day, with informal drills by midshipmen of the United States Naval Academy, and at night a great water parade followed by fireworks. The celebration will close with a costume ball on Friday, May 27.

AUTHOR'S NOTE—The author wishes to acknowledge his indebtedness for historical detail to Mrs. Sarah C. Robert, executive director of the Tercentenary Commission.

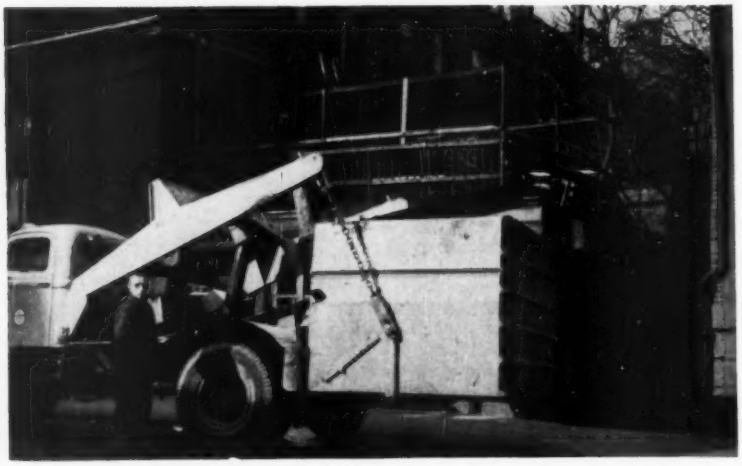
How Boston Handles Crowded-Area Garbage Collection

A location at the head of a narrow alley such as this makes the work much easier.

Big, portable covered containers provide the means for keeping rooming-house and tenement areas clean

Dumpsters empty their loads into scows to be barged to sea later.

In the Post Office Square the containers are used to dispose of street sweepings.



The big containers are picked up and hauled away daily.

AIR-MAIL special-delivery garbage disposal is a colorful term that some use to describe refuse-collection problems in the rooming-house and tenement areas of some of the larger cities. What it means is that the tenant takes a quick look out the window to see whether anyone is watching him, and throws the daily sackful of garbage into the alley.

But you have no "air-mail special-delivery" disposal practices in Boston (population 817,713, 1940 census). In the famous Hub City, Commissioner of Public Works Robert P. Curley has placed 4- and 8-yard Dempster Dumpster containers in these districts and they have solved the problem nicely—almost spectacularly.

"It's easy enough to laugh at conditions in districts like these," Commissioner Curley states. "But I wonder how many of those who laugh would be able to do any better if they had to live there. You can't fill the halls of those buildings with garbage cans nor is there room on the sidewalk for them. The people in those districts don't want to be dirty. They just don't have the facilities available in the more expensive apartments to do anything about it."

Of course, the long-range step to take is to replace inadequate housing with housing of a better character. And the Boston city administration has this as one of its objectives. But until this occurs, Boston's Department of Public Works has to meet conditions as they are.

Both Contract and City Forces Used

The task of collecting garbage by city forces is not city-wide. Probably 90% of the garbage and household refuse is collected by private organizations. As far as performance is concerned, this has its advantages. These private collectors, under contract with the city, recognize that their obligation is to collect this refuse. And if they fail, the city can at any time hire its own forces and make the collections, deducting the cost from the private collectors' contracts.

But of the 10% of the city's area remaining, served by Commissioner Curley's crews, virtually all is in the rooming house and tenement areas. His crews have to handle the work where the collection problems are the toughest.

Big Containers Tried

To solve this problem he decided to try a few of the big Dempster Dumpster units located on a sidewalk in a rooming-house area. With only a moderate amount of educational and police work, he has persuaded the people to put each day's accumulation of garbage in the containers.

This educational program was not hard. The people took to their use readily. You can tell how popular they are, Commissioner Curley explained, by trying to take one of the containers out of a neighborhood, once it has been used. On more than one occasion he has had hastily formed committees on his hands when he has even tried to move the location of the Dempster units. On the basis of his good luck with the first of these Dumpsters, he now has acquired 42 that see plenty of daily use.

The Department locates the big containers in certain of the squares of the city such as the Post Office Square, Copley Square, Scollay's Square. In these locations, the containers make it easy for the various business houses to to dispose of boxes and other trash. Street-sweeping crews also empty their cans of sweepings into the containers, so that all this can be hauled away in one convenient loading.

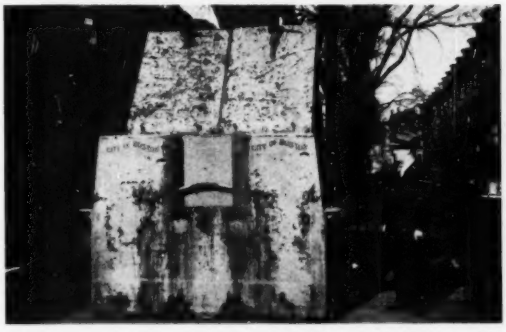
Alley Locations

The department also locates the containers at the ends of alleys too narrow for the conventional garbage truck to enter. The crews roll the barrels of garbage in the alleys to the containers. From this point, the trucks can take them away at their convenience.

A number of the containers are located in the public market places on Saturday nights when the markets are open. The city maintains these markets so that farmers and others can bring their produce in and sell it directly. Prompt disposal of the waste food is, of course, a prime necessity.

But the most important locations that the department makes are in the tenement and rooming-house area. Here they are set sometimes in the street and sometimes on the sidewalk. And here is where the greatest beneficial effect of the containers is found. For the people like to have a good place to get rid of this daily accumulation of trash. The containers are emptied daily and each day finds them filled.

To expedite the work of this and other phases of refuse disposal, Commissioner Robert P. Curley has on his staff Adolph Post, Division Engineer of the Sanitation Division, and Tim O'Leary, Chief Supervisor of the Sanitation Division.



Here is a container serving a rooming-house district. In this residential area of Boston it is filled regularly each day.

Here is another narrow alley. Ordinary refuse collection system would be expensive and impractical.

George Kling's all-purpose jeep sprayer. The spray equipment attached to the front of the truck is adjustable for height and width, and the hand spray Mr. Kling is using is for close work.

Union, N. J., develops a jeep truck spray to eliminate ragweed and poison ivy, using a 2-4D solution

By GEORGE KLING
Superintendent
Department of Streets & Highways
Township of Union, N. J.

THE Department of Streets and Highways of the Township of Union, N. J., initiated the control of ragweed and poison ivy by the spray method in 1948. By commencing operations in May, which is about the earliest that weeds start their annual growth in this area, the Department is in a position to cope with the various types of weeds while they are still easy to kill. We decided to use the Sherwin Williams Butyl Esters of 2-4D. This chemical is highly concentrated and requires only one quart to 5 gallons of water. The diluted solution is ordinarily sufficient to spray an entire acre of weeds.

Jeep-Mounted Sprayer

Since we also desired to use the truck for snowplowing, we purchased a one-ton four-wheel-drive jeep pick-up-body truck. A half-ton jeep would have been large enough for only the weed-spraying with the solution mentioned above.

An ordinary 55-gallon drum was mounted in the truck body with a 2-inch fill pipe and a ¾-inch outlet pipe with valve.

From the valve we ran a ¾-inch pipe to a pump. This pump is power-operated by a V-type belt from a power take-off from the truck engine.

The outlet from the pump was connected to a tee. From the tee we ran one ¾-inch rubber hose to the spray bars on the front of the truck. Another ¾-inch rubber hose was run to the hand-operated spray bar.

The bars on the front of the truck total 18 feet in three 6-foot sections.

Each section is a unit in itself, connected together with flexible rubber hoses with stop cocks between each section. This allows the use of each section individually, or two or three sections may be used together. In this way, should it be desirable to spray only a 6- or 12-foot-wide area, no material is wasted. Also, by using one side-section bar, the truck can operate on the road and spray the area between the curb and sidewalk. Where there are few houses, the truck can operate on the sidewalk itself. The spray booms are also flexible enough to allow the spraying of sumac or other undesirable trees. For this operation the boom on one side is raised to a vertical position. This will allow a spraying up to a height of 9 feet.

As the 2-4D solution works best when the leaves of plants are wetted with it, it is necessary to have these booms very flexible. We found that approximately 24 inches above the ground was the best height for the horizontal spray boom to operate. The "fan" from the spray nozzle came together at 12 inches, thereby wetting all weeds that had not grown to a height of more than 12 inches.

This type of boom can be raised to a height of 5 feet above the ground at almost any interval. The boom is also so constructed that if there are any trees or other obstacles in the way of the side booms, it is simply necessary to travel slowly when the boom touches the object. The side boom will bend at the hinge and snap back into position after the object has been passed, without changing the line of truck travel.

There are four nozzles on each 6-foot boom section, or a total of 12 nozzles in 18 feet of boom for 18 feet of spraying at one time.

Hand Spraying Necessary

In some instances it is necessary to spray by hand to avoid damaging desirable shrubbery or other plants close by. To do this we made up a hand-hose arrangement. This required the use of an ordinary garden hose reel with a hollow spindle, to which we attached 250 feet of ¼-inch rubber hose. On the end of the hose we attached a hooded spray bar with three nozzles. We placed a valve on the handle of the boom to allow for local control and another valve at the pump to relieve the

pressure on the hand hose when using front of truck boom.

The hose reel was bolted fast in the truck body and was never moved. The drum of the reel had a handle or crank to wind the hose after using. In this way it was necessary to use only one man for spraying, since he simply pulled the hose directly off the reel as required. Also the reel arrangement kept the hose from being scattered around in the truck body.

Most of the foregoing equipment was purchased from the Sherwin Williams Company. Of course, as is usual, we made several changes.

Routine Established

Each morning the operator of this truck received a list of locations to be sprayed. He then mixed and filled the 55-gallon drum with the proper 2-4D solution. This drum was filled every morning. We then knew that the amount of solution required to fill the drum was the amount of solution used for the previous day's work. A regular daily work card had been made out by the operator at the end of the previous day. This card carried the exact locations where the spraying had taken place. It was then only necessary for the operator to add the quantity of solution and we knew how much material and labor were used, and the total cost of the job.

This record is good to have in the event we had been called upon to check the area sprayed. Also, as it took up to two weeks, depending on the weather and type of weeds, to show marked results, we might have received a call from a resident who had noticed the weeds. By referring to our files while the person was still on the phone, we could state in a few seconds, "on such a date that area was sprayed. We will make a check in a few days since it is not yet time for visible results; if we find there are no results we will respray."

At this point it is well to note that we had no duplication of spraying of any area for the same type of weed. This indicates the great success of the project.

Warm Weather Best

The effect of the 2-4D solution appears to be quicker in warm weather. There also appears to be no question that results are better when weeds are young.

Particular care must be taken on a windy day, as the spray is very fine. In fact, it is really a mist and will blow quite a distance. If one is not careful desirable plants will be killed by this mist.

Spraying is effective after a rain when the weeds are wet, but if it rains within an hour or two after spraying, the effect appears to be less pronounced.

In 1948, the first year of this project, we sprayed a total of approximately 300 acres. We did not have any repeat spraying. We did not have any complaints that growth other than weeds were affected.

	per acre
Cost of labor, approximately ...	$1.27
Cost of material, approximately.	2.08
Cost total	$3.35

The figures above do not include equipment or equipment operation.

Seattle's Concrete Diving Piers

By JAMES D. GRAFTON

SLIVERS and rusty nails are unavoidable hazards on even the best-kept wooden rafts. Seattle's Park Department knew this when it was searching for an economical and permanent replacement for the splintered and water-soaked, wood-decked rafts at its Madrona bathing beach. Concrete piers solved the Department's problem.

The initial cost of these piers proved to be high, but in the long run these platforms will show their worth. Their advantages far outweigh their cost, and maintenance savings alone will pay the Department dividends every year. Investigation showed that merely to replace the worn-out rafts with similar structures would have cost $4.25 per square foot. The concrete piers cost about $5.83 per square foot.

These piers are designed to last. Wooden rafts need yearly patching, and require an entire new deck every 10 years. While a wooden raft becomes watersoaked and needs replacement every 25 years, piling construction has been known to remain solid after 75 years of service.

Safety Features

The advantages of these piers are not confined to economy of maintenance. Their users reap benefits from the extra safety built into them. Beach employees noticed an absence of cut feet during last summer, the first in which the platforms were in use. Their concrete decks were given a special rough, or brush, finish to solve the problem of wet, slippery surfaces that bathing beaches always have. Kids can run and play tag on this surface.

The contract finally let called for two piers, one 20 by 60 feet and one 40 by 60 feet, equipped with ladders and steel diving towers. The entire project cost the city $21,074.

T. N. Buchanan Co., Seattle, contractors, was awarded the job. It took about three months to complete the reinforced concrete platforms. A page was borrowed from bridge designs in drawing up plans for the piers. Their concrete decks are supported on much the same principle as are the roadbeds of many small concrete spans.

Each of the structures is supported just above the water level by 16 creosoted pilings. Its deck rests on an equal number of steel hangars. Every piling is topped by one of these H-shaped supports. The deck is built to a crown in the middle and slopes to the edges to allow water to run off.

The larger pier is equipped with one 3-meter steel diving tower and two 1-meter spring boards. The other has one 3-meter platform and one low board. Both structures have pipe handrails bolted to their sides for tired swimmers to hold to, and of course ladders extending down into the water.

The two platforms are set 50 yards apart to make a standard racing distance. A turning surface was designed for this course edge to facilitate racing turns. This surface consists of an extension of the side into the water for a depth of about 4 feet.

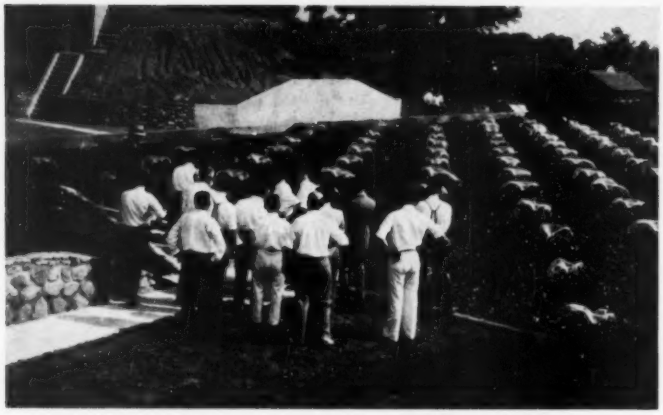
The Seattle Park Department believes it has found the right answer to one of its problems. It has recommended that old-fashioned wood rafts at two more of its beaches be replaced with concrete piers when funds become available.

PHOTO COURTESY OF THE SEATTLE PARK DEPARTMENT

One of Seattle's two new concrete diving piers.

How to Control Psychoda Flies In Sewage-Treatment Plants

By JOHN W. HOOD
Plan Superintendent
Ridgewood, N. J.



A group of sewerage men inspect the Ridgewood filters.

SEWAGE-TREATMENT plants using trickling filters have a long reputation of good operation frequently in the face of difficulties. Equally long and impressive has been the battle that this type of plant has had to wage against the annoying psychoda fly that breeds in the rocks of the filter beds. As is well known, the flies often become so bad that they force suspension of all plant work and destroy the effect of the treatment.

In Ridgewood, we have discovered that the products DDT and BHC (Benzenehexachloride) can eliminate those types of psychoda flies that are common to us. Either do the work relatively quickly and inexpensively without putting the filters out of service for long periods as is the case with other types of treatment. Each is effective against a certain type of fly, as the following discussion will show.

Before giving a report on our program with this type of control, I would like to recount some of the events that led to its adoption. Since the prime interest today centers on the newer organic compounds such as DDT, reference to the conventional method of control through inundating the filter bed will be brief.

Prior to the advent of DDT and other chlorinated compounds, the common practice for psychoda control was inundation. However, it was not reliable. Many filter installations lack facilities that make flooding possible. Operators in these cases are forced to use relatively ineffective garden sprays. More often they simply take the filter out of use, allow the film on the filter rocks to dehydrate, and thereby destroy the psychoda ova. Naturally, this means a poorly treated sewage.

Headlee's[1] flooding technique was practiced on the Ridgewood filters for eight years with varying success. Ours is a "standard" fixed nozzle bed, 0.6 acre in area, 5½ feet deep, with a concrete floor, and concrete walls extending 15 inches above the surface of the basalt media. The control chamber is equipped with 24-inch Hardesty low-pressure rising-stem sluice gates, operated by pedestal hand wheels mounted on top of the chamber.

Flies Still Persistent

Our basic objections to flooding were as standard as the practice itself. It deteriorated the effluent quality. It took the filter out of service for 24 to 36 hours, exclusive of filling and emptying. The prolonged immersion adversely affected the zoogleal film, particularly at the higher temperatures, and impaired the filter efficiency for some days subsequent to the flooding operation.

Furthermore, we enjoyed only partial success. In 1946, despite a twice-weekly flooding schedule, the system failed to give us anything resembling adequate control. This possibly was due in some measure to the excessive rainfall.

DDT Studied

The use of DDT presented itself as the first alternate. A study of the record revealed that successful work had been done on a 33-mgd trickling filter installation.[2] This treatment had the advantage of involving no interruption of filter operation or serious impairment of the effluent quality. The plant used an application of one part per million DDT, based upon the 24-hour inflow.

Using this application on our filter with the 3-mgd capacity input to the filter nozzle, we applied the DDT over a period of 2 hours, to derive a concentration at the nozzles of 12 ppm. This gave us 20 days of control that was 95% effective. The remaining 5% control was accomplished by hand spraying of the exposed wall surfaces and marginal areas of media not covered by the sprays at weekly intervals. We consumed one pint of emulsion per hand-spray operation. Pennco 34% DDT emulsion concentrate was the particular product used. As in the previous reference, no interruption of filter operation was involved, the only contact time being that afforded by the rest period between operation of the automatic siphons.

After 24 days, adult psychoda appear on the fringe around the filter, indicating that another treatment was due. This time we cut the application by half. We applied 0.5 ppm of DDT, computed as before, but were disappointed to find the results ineffective. After five days, we repeated the treatment, using the original effective does of 1 ppm.

Work Reappraised

An editorial discussion of filter-fly control with DDT, appearing in the *Sewage Works Journal*,[3] threw some light on why our reduced application was ineffective. In particular, it cleared the confusion arising over application in terms of ppm—and what seems more significant, the pounds of net DDT per acre-foot actually used to obtain successful control. Reexamining the Ridgewood filter experiments on the basis of pounds of DDT per acre-foot, and comparing it with Brothers'[4] results, both based on ppm dosage, we find that, mainly due to structural difference, we

applied 8.33 pounds per acre-foot. In contrast he applied 15 pounds per acre-foot.

Proportioneers, Inc., and other references indicate that the extension of the application time increases the efficiency of treatment, decreases the concentration of DDT, and yields substantial economies over the batch methods. For the proper application of the emulsion, a pump should be employed, so that not only the amounts applied, but the manner of application may readily be controlled automatically over any desired period.

Since the solvents used to emulsify the DDT attack plastic, rubber, and similar working parts, Ridgewood elected to purchase a Proportioneers Adjusto-feeder which has a pump end that is all iron. The pump has a capacity up to 7.4 gallons per hour. The ample range of control, coupled with the operator's ability to readily control the solution to any desired concentration, suited it to our needs.

Psychoda Flies Reappear

Excellent control was thus effected from May 12 to August 18, 1947, without interruption of plant operation or deterioration of effluent quality. Then quite suddenly DDT failed to function. There was no change in plant conditions, but it was noted that the psychoda were of a smaller, less "hairy" variety, having "roof-shaped wings." They were much more transparent than their predecessors, possibly indicating a change to a species having greater resistance to DDT. The former species was P. Albipunctatus; the latter, P. Alternata. Entomologists report that both species are usually found in a filter, but either one or the other will predominate.

Apparently DDT controlled the former when it predominated, but was unable to cope with the latter. The Pennsalt Research Laboratory tested the emulsion and found it as effective as when fresh. Nevertheless, it proved ineffective even when the concentration was tripled. In the ensuing periods we tried various other compounds—Isotex, Vapotone, Cloroben, Naccanol—but the psychoda Alternata was too tough for them all. We tried "fogging"[5] the DDT through the filter media, but it also proved unsuccessful. As a final resort, we went back to the old policy of flooding and sacrificing treatment quality.

BHC Tried

However, we began to find ourselves on the right track again when we tried Pennco BHC E-9, Benzenehexachloride. Our first experiment showed inconclusive results because a severe thunderstorm broke just as the work commenced. Later we tried BHC again, using a much higher concentration, and a longer contact time, but disrupting filter operation temporarily.

The dosing-tank filter and final clarifier were taken out of service and the amount of liquid remaining in these units reduced to 25,000 gallons. Fifteen gallons of BHC E-11 plus two quarts of emulsifier were added and pumped back continuously for 12 hours. This resulted in the entire area of the bed's being dosed once per hour, yielding 10-minute application time and 50-minute rest or contact period, and a 600-ppm. or 0.06%. BHC E-11 concentration.

Thorough Control

The surface of the filter media became completely covered with a coating of dead or dying larvae and pupae, also adult psychoda, soon after the first dose. Thereafter a heavy discharge of psychoda was noted in the filter effluent. After 12 hours, the filter was restored to service. No adult psychoda were to be found anywhere and the situation was brought completely under control without marginal spraying.

Clarification was impaired for four days, but no sloughing of filter solids occurred as a result of this potent treatment. Laboratory tests showed that BOD removal through the plant was 96% with near zero turbidity. The filter performance was actually better than at any time prior to the application of the BHC.

The initial BHC treatment yielded 28-day psychoda control. In the next application only 10 gallons were employed and this treatment gave control for the next two months.

Conclusions

These studies bring to light certain observations applicable to the control of the psychoda fly. These may be summarized as follows:

1. Two types of psychoda fly commonly infest the Ridgewood trickling filter. These are the Psychoda Albipunctatus, and the Psychoda Alternata. Prior to the recent studies, the former predominated.

2. The Psychoda Albipunctatus was successfully controlled by applications of DDT emulsion as outlined in the article.

3. With the Albipunctatus out of the way, the Psychoda Alternata made a strong infestation. This latter type is small, tends to stay close to the filter, is extremely waterproof, and has been seen flying in clouds during a severe thunderstorm.

4. The Psychoda Alternata is highly resistant to control by flooding and by such insecticides as DDT, Vapotone, and others.

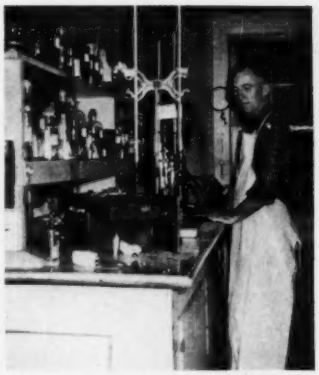
5. Employing benzenehexachloride, BHC, in which the active ingredient is essentially the gamma isomer plus added emulsifier, together with a prolonged contact technique, effective control may be obtained over this highly resistant species.

6. Reinfestation of the treated filter by eggs laid by the flies is indicated as the source of recurring hatches. The residual BHC on the filter film plays a large part in extending the effective treatment time beyond that obtainable by flooding, which in some instances was only a few days!

7. The ultimate minimum of treatment in terms of concentration and contact time has not yet been established.

8. Successful control work in 1948 employed concentrations of 666 ppm BHC. In terms of the active ingredient, the gamma isomer, which represents 11% of the total product, this is a concentration of 73 ppm. In our case it involves the application of 10 gallons of Pennco BHC E-11, and a 12-hour contact time.

9. It remains to be seen whether this species will be capable of developing resistance to this treatment, as has been the case with certain of the diptera, when treated with DDT.



Plant Superintendent John W. Hood in his laboratory at Ridgewood, N. J.

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The new softening plant has attractive architectural lines.

Junction City Gets Better Water

New softening plant reduces calcium and magnesium in the water delivered to the people of this Kansas city

WHEN a city has to sink a well to a deep limestone stratum and tap a supply with three or four hundred parts per million of calcium and magnesium hardness in it, one has a right to consider whether this liquid so provided is actually water. Of course it conforms to the general specifications. If you put it on a fire, it puts the fire out. If you drink it, it will quench your thirst. However after that point, you are treading on dangerous ground.

Let City Manager Elder Gunter tell you about the water supply in Junction City, Kansas (population 8,313, 1940 census), where the hardness ran around 350 parts per million. If you used it in a boiler it promptly crusted the inside of the tubes and clogged them. If you tried to wash with it, it combined with the soap to form a tough, cottage-cheese-like substance instead of suds. If this combination dried to the bottom of the wash basin or tub, it formed a tough, stipple-like film that was miserable to remove. The manganese in the water made it brown and at times the sulphides gave it the odor of rotten eggs.

It was better than no water at all, said Manager Gunter, but it was a long way from good.

That's not the case today. Junction City now has a new water-softening plant that knocks out nearly three-fourths of the calcium and magnesium hardness, bringing it to a respectable figure of less than 90 parts per million.

The new plant uses aeration as the first step to remove the carbon dioxide and part of the iron and manganese. Following this, the raw water receives its dosage of lime, soda ash, and alum from Omega lime slakers and dry feeders to provide flocculation and remove the hardness. The water is flocculated in Dorr upflow-type clarifiers. Clarification is encouraged by the use of the floating sludge blanket principle.

From here the water proceeds to the filters, and following this it is recarbonated to correct for excess alkalinity before delivering the water to the filtered water reservoir. The filters use Simplex Valve and Meter Company hydraulic controls and E. W. Bacharach and Company control tables.

As might be expected with an improvement like this, the old rates did not provide enough revenue to support the plant. Consequently the rates were raised about one-fourth. However,

The filter room. Water hardness was reduced from 350 to less than 90 ppm.

at the same time, the ultimate costs to the customer are reduced by virtue of the improved water distributed. The saving in the cost of soap alone is estimated at nearly $1.50 per person per year. Studying the effect on heating and plumbing discloses that each person can save an average of nearly 90 cents per year by using the water. It should also make possible a savings in fuel of nearly 70 cents per person. The life of clothing and other wash goods also will be lengthened, enabling each person to save another $1.80 per year. In all each person will be the gainer by about $4.75 per year through this new softening plant, and each family of about four about $19 per year. This in most cases will more than offset the increased cost of the water.

The new plant required an investment of a quarter-million dollars. Of this the city provided $57,000 from government bonds and raised the balance by a 20-year bond issue amounting to $143,000. The remainder was paid from cash surplus in the water fund.

The new improvement was designed and its construction supervised by Wilson and Company of Salina, Kans.

Police Salaries Have Lagged In St. Louis

THE salaries of St. Louis policemen have not kept pace with those of other city employees, according to the Governmental Research Institute of St. Louis, Mo. This difference arises from the fact that police salaries are fixed by the State Legislature, while the compensation schedule for most city employees is adopted by the Board of Aldermen upon recommendation of the City Civil Service Commission.

In 1939, a probationary policeman was paid $1,860 a year, and a probationary fireman $1,680. After completing the probationary period, a policeman and a fireman received the same salary—$2,160 a year.

The following tabulation shows that the present compensation of St. Louis policemen is considerably under that of St. Louis firemen:

	Starting Salary	*Maximum Salary*
Policemen	$2,520	$2,940
Firemen	3,144	3,480

The present salary of probationary or beginning policemen is 35% above the rate paid in 1939, as compared to an 87% increase in the beginning salary of firemen. The maximum salary of policemen has been increased 36% during the last 10 years, while the maximum salary of firemen has been increased 61%.

In Table I it will be noted that the beginning salary for policemen in the largest 14 cities ranges from $2,358 in Pittsburgh to $3,480 in Los Angeles. In 11 of the cities, the beginning salary is higher than St. Louis' $2,520. The maximum salary for policemen ranges from $2,940 in St. Louis to $4,150 in New York. In other words, an experienced policeman now receives less compensation in St. Louis than in any other large American city.

The Board of Police Commissioners has prepared for introduction in the State Legislature a bill providing higher salaries for all ranks of St. Louis policemen. These proposed salaries are compared to present salaries in Table II.

Under the proposed salary schedule, a probationary patrolman would receive $3,144 a year, which is now the beginning salary of St. Louis firemen. The maximum salary of a patrolman would be $3,480, which is the maximum for firemen.

On the basis of duties and the ability and training required for the proper performance of these duties, higher pay for policemen than for firemen is warranted. Lower pay for policemen than for firemen cannot be justified.

The rank of corporal, created by the Legislature in 1946, does, in effect, enable 204 of the more capable patrolmen to receive higher compensation than firemen. Under the proposed schedule a corporal would be paid $3,580 during the first five years and 3,680 thereafter, as compared with the maximum of $3,480 for a patrolman or a fireman.

The proposed schedules would give St. Louis policemen a salary comparing favorably with that in most of the 13 other cities of more than 500,000 population. Eight of these cities now pay a lower beginning salary. Six pay patrolmen a lower maximum salary and one, Chicago, pays the same maximum proposed for St. Louis.

The proposed pay for the higher ranks of police officers, through captains, would be on a level equal to that of comparable positions in the Fire Department. The ranks above captain in the Police Department are not comparable to positions in the Fire Department, due to difference in department organization and work. The salaries of these higher ranks would be increased to maintain approximately the existing relationships between the various ranks. They would be in line with salaries paid the higher ranks of police officers in most other large American cities.

TABLE I

SALARIES OF POLICEMEN IN AMERICAN CITIES OF OVER 500,000 (1940 CENSUS)

(Listed in Order of Maximum Salary)

City	*Starting Salary*	*Maximum Salary*
New York	$3,150	$4,150
Los Angeles	3,480	4,080
Detroit	3,194	3,908
San Francisco ...	3,420	3,780
Milwaukee	3,367	3,727
Cleveland	2,640	3,666
Chicago	3,012	3,480
Philadelphia	3,024	3,424
Washington, D. C.	2,721	3,398
Pittsburgh	2,358	3,238
Baltimore	2,600	3,120
Boston	2,500	3,000
Buffalo	2,700	3,000
ST. LOUIS	2,520	2,940

TABLE II

PRESENT AND PROPOSED SALARIES OF ST. LOUIS POLICEMEN

	Present Salary	*Proposed Salary*
Chief of Police	$7,800	$9,000
Assistant Chief	5,700	6,600
Lieutenant Colonels ...	5,700	6,500
Majors	5,100	6,000
Captains	4,500	5,100
Lieutenants	3,900	4,500
Sergeants (maximum)..	3,600	4,000
Sergeants (beginning) .	3,420	3,900
Corporals (maximum) .	3,240	3,680
Corporals (beginning)..	3,120	3,580
Patrolmen (maximum).	2,940	3,480
Patrolmen (probat.) ...	2,520	3,144
Turnkeys	2,200	2,700

Magazine Announces New Community Beautification Contest

BETTER HOMES & GARDENS magazine has announced its fifth "More Beautiful America" competition "to help Americans make their communities better places in which to live."

The national contest offers $6,100 in cash prizes and achievement plaques to winners in both community and industrial divisions. The new contest will be based on beautification accomplished between April 1, 1949, and November 1, 1950, as told in an article accompanied by "before" and "after" pictures.

Any civic, religious, fraternal or industrial group may enter the competition. The beautification must be civic and permanent in character and of benefit to the whole community.

Checks totaling $6,100 and 17 plaques and seven certificates have been distributed to winners in the fourth "More Beautiful America" competition which ended October 1, last year.

IDEAS from SWEDEN (CONCLUSION)

FOR AN AMERICAN CO-OPERATIVE HOUSING PROGRAM

By DONALD MONSON*
Senior Architectual Planner
and
ASTRID MONSON
Senior Economist
Detroit City Plan Commission

HERE are the remaining four aids by which Swedish housing has been stimulated. A description of the first three appeared in the April issue.

4. Preference in Material and Labor Allocations

Since 1933, when the Social Housing Commission—of which Sven Wallander, head of HSB, was a member—was set up, there has been an increasing tendency in Swedish social and political thought to conceive of housing as a basic social necessity for all and as a responsibility of government.

With the private building-capital "strike" of 1941, the government called upon the co-operatives and the municipalities to fill the gap caused by the almost complete standstill of private building enterprise, which prior to 1941 was building 70% of Sweden's housing. This required a considerable expansion of public and co-operative housing activity and the co-operatives were quick to lend their experience and skill to public agencies and municipalities, their "know-how" being of great value to the many medium-sized and smaller towns that had had little or no housing experience. As a result of private enterprise's default, therefore, the trend toward socialization of the building industry was reinforced. When, owing to building materials and labor shortages and investment-capital limitations, maximum housing quotas were set in 1943, they were allocated in terms of the current proportion of the nation's home construction being built respectively by private speculative builders, the co-operatives, and public agencies. The result was that in Stockholm, for instance, private speculators were allocated 10% of the available annual quota of between 5,000 to 6,000 dwelling units, co-operatives received 20%, and municipal and joint municipal-co-operative corporations, 70%.

5. Rent Subsidies to Large Families

Abandoning its former policy of building special projects for large families or very poor people, Sweden has during the past two years adopted the policy of having all kinds of families living in a neighborhood—large and small, old and young, poor and average. Thus the undemocratic stratification of massive "public housing projects" and the undesirable social isolation of "unmarried women's apartments" or "old people's colonies" are being avoided. Municipalities now build housing developments in which any family can live, and the state pays rent subsidies to low-income families in proportion to the number of children in the family. No more than 25% of the families in such a development are permitted to be of such low-income level as to be eligible for these subsidies. Thus there is no social stigma involved in living in a "project," and the neighbors don't know who does and who does not receive a subsidy.

Rent subsidies are paid in addition to the regular grant of 260 kroner per child which all families, rich or poor, receive. This is in line with the government's program of encouraging larger families. Sweden's birth rate before the War was the lowest in Europe—averaging about 10 per 1,000 population, the same figure as its death rate. It was felt that one reason for this situation was the prevalence of very small dwelling units and the impossibility a family with several children faced of finding a home of adequate size at a moderate rental. Thus for some years the government had been giving various forms of aid to larger families, including housing subsidies to municipalities who built special projects for "child-rich" families.

The rent subsidy is currently paid to all families with two or more children under 16 who have an annual taxable income of 4,000 kroner or less, or a gross income of below about 7,000 kro-

* The authors have been participating in the organization of a 500-family cooperative housing development in Detroit. They recently returned from a trip to Sweden, Denmark, Finland, Holland and England, where they studied housing and city planning trends.

"Point houses," Reimersholme, Stockholm, an HSB co-operative development.

ner. The subsidy is 130 kroner per child per year, which amounts to about 10% of the typical annual rental in municipal flats of modern type. Translated into dollars, this would mean that a Swedish family with three children and earning $2,000 a year gross income or less, could live in a modern, well-equipped apartment for about $22 a month. The average worker in Sweden earns in the neighborhood of $1,700 a year, and his annual rent would thus amount to about 15% of his gross income or 25% of his taxable income. This should be compared with the pre-war figure of 35% of income which a Swedish industrial worker had to pay for a new dwelling unit, or with the 33% of income which an American family earning $4,000 a year gross would have to pay to occupy a typical two-bedroom F.H.A. Section 608 rental unit at $110 a month—if he could afford it!

6. Special Municipal Subsidies

In order to encourage municipal responsibility for house-building, the government makes available to municipalities a special subsidy on the basis of the number of dwelling units built or under construction by the municipality during the year. This is also available to quasi-public joint corporations. It is passed on to low-income families living in developments built after July 1, 1946, and amounts to 3 kroner (about $1) per square meter of floor area per year. It is given in the form of a rent reduction, and amounts to about 15% of the annual rent of a typical unit. It should be noted that this subsidy is not paid to members of ordinary co-operative housing associations.

7. Rental of Public Land

In a number of Swedish cities—notably Stockholm—virtually all land not already built up has been bought up by the municipality and is held as a land reserve for future needs. This has, of course, put an end to speculation in land and has been an important factor in bringing housing costs down. The city of Stockholm (population 700,000) owns 32,500 acres of vacant land within the city limits and, together with the state, has bought up vast areas of vacant land surrounding the city for miles in every direction. This land is leased for agricultural use until it is needed for development. It is made available to co-operatives or other prospective developers at nominal annual rentals, usually based on the number of square meters of floor area rather than land area.

Under these circumstances, the city planning of new neighborhood units becomes a simple and logical process. The city makes a master plan delineating the new residential areas and decides upon the time sequence in which they are to be developed. A detailed plan is next made by the city for each neighborhood to be built, showing not only the areas to be developed with apartments, row houses, free-standing houses, shopping centers, industry, parks and playgrounds, etc., but actually working out site plans for all these districts. The land is then leased to such developers as wish to build in accordance with the plan, or, where the municipality wishes to develop an area, it does so. Modifications in the plan are encouraged where they are found to improve it. Rental charges in Stockholm for land leased for apartment building amounts to about 50 cents per square meter of apartment area per year, or between 6% and 8% of the annual rental of a typical apartment. Land leases are written for sixty years and are renewable at the end of that time, with provision made for an increase in the annual rate or for termination of the arrangement at that time.

Applicability to U. S. Co-operative Housing

The organization of the housing industry in this country is in many ways quite different from that of Sweden. So is our general political climate and our concept of the role of government in relation to the economy of the nation. Where housing is concerned, even the more radical of the various versions of comprehensive housing legislation introduced into the last three Congresses have assumed that the bulk of the housing to be built would be by private enterprise. If it is estimated that we will build a million dwelling units a year during the next few years, the amount of public housing authorized in various bills has ranged from 5% to 15% of the total, with private enterprise undertaking the remainder.

Under these circumstances, American co-operative housing enterprises can hope to receive certain aids along the lines of the Swedish co-ops, but the specific techniques to stimulate and help develop them will probably vary considerably from the Swedish model. Of the seven types of aids given by the Swedish government, perhaps the credit, interest, and land provisions are the most applicable. More important, in one sense, than any specific aids would be the determination on the part of Congress and federal housing officials to develop a vigorous co-op housing movement.

At the time of writing, the only aid housing co-ops can receive is FHA mortgage insurance under a formula which results in mortgages of between 85% and 90% of actual cost. Since the agency is primarily concerned with mortgage insurance rather than with the promotion of this relatively new and untried form of home-building, it is not surprising that little emphasis has been given it by the Federal Housing Administration. It is actually doubtful whether any significant amount of co-operative housing will develop under these circumstances.

Recommendations

In terms of the Swedish system and our own framework, then, it would appear that the following aids should be provided to co-op housing.

- Establishment within the Housing and Home Finance Agency of a separate department, of equal rank with the Federal Housing Administration, whose responsibility it would be to promote co-operative

A kitchen layout in a co-operative, with compact and efficient equipment.

housing and help labor, veteran, and tenant groups organize such societies.

- Appropriation of funds to such an agency, with authorization to make long-term direct loans to co-operatives and other types of non-profit and limited-dividend housing corporations for at least 95% of costs and at the going federal interest rate plus administrative and insurance costs.

- Provision of federal loans to municipalities enabling them to purchase land reserves which they, in turn, can lease to such corporations at nominal rents.

Provisions of Pending Bills

At the time of writing, a number of bills have been introduced into Congress which contain provisions of this type. Four of them are quite similar—S. 724, the Flanders-Tobey-Ives bill; H.R. 1883, the Bolton bill; H.R. 2516, introduced by Helen Gahagan Douglas; and H.R. 1973, the Javits bill. All of these contain the title: "Privately Owned Housing for Families of Lower Income," and contain provisions for the following:

- Establishment of a Housing Loan Administration, under a Housing Loan Commissioner, within the Housing and Home Finance Agency

- Authorization of such agency to give technical and other assistance to eligible co-operative or other non-profit or limited-dividend corporations in the initiation, development, and administration of their projects

- Authorization of such agency to give direct loans to such corporations up to 100% (in the case of H.R. 2516, 95%) of the development cost of such projects

- Authorization of such loans to the extent of $500,000,000 (H.R. 1883, H.R. 1973, and S. 724) to $1,000,000,000 a year (H.R. 2516) for the next four to six years

- Establishment of the interest rate for such loans at a rate not less than the going Federal rate at the time the loan is made, plus one-half of one per centum

- Setting amortization periods ranging up to sixty years

- Limiting occupancy to families whose net income does not exceed five times—or, in the case of families with two or more minor dependents, six times—the gross rent, including utilities

H.R. 2811, the Patman bill, also provides certain aids to co-operative housing associations—primarily mortgage insurance and aid in organization and planning. It emphasizes veterans' preference and does not specify income limits.

It can be seen that these provisions, if passed, give housing co-operatives aids roughly equivalent to the Swedish mortgage-credit system and interest guarantees. (See April issue.) Another type of aid, although not explicitly established for co-operatives, might seem to be possible through the community-development provisions of the bi-partisan comprehensive housing bill, S. 1070, which at the time of writing has just been approved by the Senate Committee on Banking and Currency. This bill permits federal loans of as much as 40 years' duration to local communities to enable them to acquire, in addition to blighted areas, platted land which is predominantly open and which because of obsolete platting, diversity of ownership, or other factors arrests sound community growth, and also open unplatted land necessary for sound community growth. Land so acquired may be made available for predominantly residential uses to private or public agencies through either sale or lease. Thus, co-operative housing corporations would be able to buy or lease land from the municipality in much the same way as in Sweden.

Toward a Well-Rounded Housing Program

With the above aids, and without tax exemptions or subsidies, it will be possible to build co-operative housing of high standard to rent between $50 and $65 a month. Under the income limitations described above, this would be available to families whose maximum net annual income is between $3,000 and $3,900—or, if the family has two or more children — between $3,600 and $4,700. In terms of today's wage levels, this would bring co-operative housing costs within the means of roughly the middle half of the country's wage brackets. Later, economies of large-scale construction, ownership of building-materials plants, acquisition of large areas of cheap, outlying land, and other techniques can make it possible to reduce rents to the point where all families above the public-housing level can afford them. With an adequate public housing program for the lowest-income groups and with custom-grade private housing available to high-income families, a well-rounded housing program would result which could, over a period of fifteen or twenty years, provide a decent, attractive, modern home for every American family.

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A well-equipped municipal communal laundry. Tenants use it, but it is also in service for commercial work.

Modern Water Rates and Service Charges - XIII

Roanoke, Va.

Rates

Roanoke has one service level that receives water by gravity. It has seven others requiring repumping. The latter levels have a higher rate to compensate for the pumping cost differential. Below are the rates for the gravity service:

Quarterly Billing—Minimum Charges
Allowance 600 cu. ft. per quarter

⅝" meter (standard size)	$ 3.75
¾" "	4.50
1" "	5.25
1½" "	6.75
2" "	10.50
3" "	15.75
4" "	25.25
6" "	30.75
8" "	55.25

Minimum charges for the repumped levels are all 30c higher.

In addition to these minimum charges, rates per 100 cu. ft. in excess of 600 cu. ft. allowed under the minimum, shall be as follows:

For next	8,400 cu. ft. @	8.3¢ per 100 cu. ft.
" "	81,000 " "	.24 " " " "
" "	315,000 " "	.16 " " " "
All over	405,000 " "	.08 " " " "

For water delivered at the repumped levels the rates are all 3c per 100 cu. ft. higher.

Minimum monthly charge for service certified for exclusive use of fire protection:

4" meter	$3.00
6" "	3.75
8" "	5.00

Minimum allowance, 200 cu. ft. excess quantity is delivered at the same rates as shown above.

Monthly charges for standard fire hydrants for public fire protection are $3.75.

General Data

Population served	72,000
Services (100% metered)	17,538
Hydrants	1,032
Miles of mains	259
Service levels	1 gravity and pumped 9 repumped
Supply	Springs and surface reservoir
Treatment	Springs—chlorine only Surface—filtration
Average demand	7½ mgd
Plant capacity	15 mgd

Customer Costs Per Month

	Gravity	Pumped
3,000 gals. (400 cu. ft.)	$1.89	$2.09
5,000 " (667 " ")	2.75	3.08
10,000 " (1,333 " ")	4.87	5.53

These rates were established September 1, 1947.

CHARLES MOORE
Water Department Manager

Tyler, Texas

Rates (Per Month)

		Per 1,000 Gals.
First	2,000 gallons	$1.00 minimum
Next	3,000 "	.40 "
"	20,000 "	.30 "
"	25,000 "	.25 "
"	50,000 "	.22 "
"	100,000 "	.20 "
"	300,000 "	.18 "
"	500,000 "	.15 "
Over	1,000,000 "	.12 "

General Data

Population served	43,500
Services (100% metered)	10,400
Hydrants	497
Valves	1,306
Miles of mains	145
Supply	Impounded reservoir and deep wells
Treatment	Filtration
Average demand	3.4 mgd
Plant capacity	7½ mgd

Customer Costs

3,000 gals. (400 cu. ft.)	$1.40
5,000 " (667 " ")	2.20
10,000 " (1,333 " ")	3.70

J. M. LLOYD
Water Superintendent

Jackson, Miss.

Rates Per Month

First	1,000 cu. ft.	20c per 100 cu. ft.
Next	1,000 " "	16c " " " "
"	1,000 " "	14c " " " "
"	1,000 " "	13c " " " "
"	1,000 " "	12c " " " "
"	5,000 " "	11c " " " "
"	90,000 " "	10c " " " "
All over		9c " " " "

General Data

Population served	100,000
Services (100% metered)	14,600
Hydrants	1,250
Valves	2,600
Miles of mains	300
Supply	River
Treatment	Rapid sand filtration
Storage	25 mg
Average demand	9 mgd
Plant capacity	14 mgd

Water Characteristics

$CaCO_3$	42 ppm
Fe	0.03 "
Mn	Trace
pH	9.0
Temperature	40° to 80° F.

Customer Costs

3,000 gals. (400 cu. ft.)	$ .80
5,000 " (667 " ")	1.34
10,000 " (1,333 " ")	2.53

BAXTER WADE, *Superintendent*

Covington, Ky.

Rates (Charged Quarterly)

		City Limits	Outside
First	600 cu. ft.	$3.00 minimum	$4.25
Next	9,400 " "	.20 per 100 cu. ft.	.30
"	10,000 " "	.18 " " " "	.28
"	10,000 " "	.16 " " " "	.26
"	10,000 " "	.14 " " " "	.24
All over		.12 " " " "	.22

General Data

Population served	99,000
Services (90% metered)	15,000
Hydrants	876
Miles of mains	130
Storage, Ground	70 mg Raw, 3 mg Treated
Pressure	none
Supply	Rivers
Treatment	Filtration, Chlorination, Ammonia
Average demand	9.5 mgd
Plant capacity	28 mgd

Water Characteristics

$CaCO_3$	152 ppm
Fe	0.03 "
Mn	0.5 "
ph	7.3
Temperature	68° F.

Customer Costs (Prorated Per Month)

3,000 gals. (400 cu. ft.)	$1.30
5,000 " (667 " ")	1.93
10,000 " (1,333 " ")	3.27

ROBERT A. FISCHER
Water Superintendent

Gaffney, S. C.

Rates

Minimum 55c per month.

First	800 cu. ft.	.245 per 100
Next	2,500 " "	.178 " "
"	3,500 " "	.155 " "
"	6,800 " "	.133 " "
"	13,000 " "	.122 " "
"	13,000 " "	.111 " "
All over		.10 " "

General Data

Population served	12,000
Services (94% metered)	2,829
Hydrants	225
Valves	210
Miles of mains	34
Storage overhead	1 mg
Supply	River
Treatment	Rapid sand filter
Average demand	0.8 mgd
Plant capacity	2.0 mgd

Customer Costs (net)

3,000 gals. (400 cu. ft.)	$ .89
5,000 " (667 " ")	1.47
10,000 " (1,333 " ")	2.72

These rates have been in effect since January 1940. We do not anticipate an increase.

L. GAFFNEY, *Superintendent*

Akron, Ohio

Rates Per Month

		Rates Per 1,000 Cu. Ft. Gross	Net
First	20,000 cu. ft.	$1.70	$1.50
Next	20,000 " "	1.60	1.45
"	20,000 " "	1.50	1.40
"	20,000 " "	1.40	1.30
"	920,000 " "	1.30	1.20
"	4,000,000 " "	1.10	1.00
"	5,000,000 " "	.90	.80
All over	10,000,000 " "	.70	.60

Minimum Charges

	Quantity of Water Allowed (Cu. Ft.)	Minimum Bill Gross	Net
⅝" meter	2,000	$ 3.40	$ 3.00
¾" "	3,800	6.46	5.70
1" "	5,600	9.52	8.40
1½" "	8,000	13.60	12.00
2" "	10,000	17.00	15.00
3" "	14,000	23.80	21.00
4" "	20,000	34.00	30.00
6" "	30,000	50.00	44.50
8" "	50,000	81.00	73.00
10" "	85,000	130.00	119.50
12" "	130,000	215.00	197.00

Quarterly Fire Service Rates

Size of Line or Meter	Service Gross	Metered Net	Service Gross	Unmetered* Net
2"	$ 2.20	$ 2.00	$ 7.70	$ 7.00
3"	3.30	3.00	11.55	10.50
4"	4.40	4.00	15.40	14.00
6"	6.60	6.00	23.10	21.00
8"	11.00	10.00	38.50	35.00
10"	16.50	15.00	55.00	50.00
12"	26.40	24.00	88.00	80.00
16"	52.80	48.00	176.00	160.00

* Installations involving detector check valves shall be billed as an unmetered service.

NET RATES will apply on current bills only, provided the bill be paid on or before the 20th day following date rendered. After the 20th day following date rendered GROSS RATES will apply.

NET RATES will not apply unless all previous bills against the account have been satisfied.

General Data

Population served	280,000
Services	61,000
Meters	62,000
Hydrants	5,726
Valves	9,227 (Line)
Miles of mains	686 plus 17 miles of supply mains
Raw Water Impounding Reservoirs	4,200 million gallons
Treated Water Equalizing Reservoirs	22 million gallons
Treated Water Standpipes & Elevated Tanks	8 million gallons
Treatment	Rapid Filtration
Average Demand	33 M. G. D.
Treatment Plant Capacity	50 M. G. D.

Water Characteristics

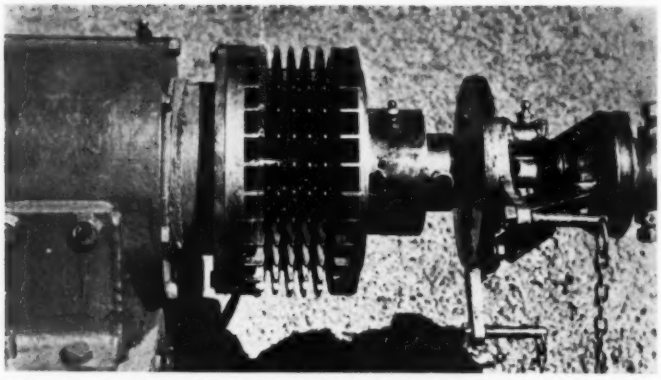
	Raw ppm	Treated ppm
$CaCO_3$	30	38
Fe	0.57	0.05
Mn	6.1	6.1
pH	7.7	7.9
Temperature	...	56°F

Customer Costs Per Month

3,000 gals. (400 cu. ft.)	$1.00 net
5,000 " (667 " ")	1.00 "
10,000 " (1,333 " ")	2.00 "

W. R. LaDUE
Superintendent and Chief Engineer

Newark Cleans and Lines 60-Inch Water Main



This close-up shows the slotted head of the Centriline pipe-lining machine that throws the cement mortar against the sides of the newly cleaned pipe.

By LAURIE M. LEEDOM
Construction Engineer
Division of Water
Department of Public Works
Newark, N. J.

Forty-seven-year-old steel line put in better-than-new condition by rehabilitation work

THE City of Newark, N. J., has just cleaned and lined more than six miles of 60-inch riveted-steel water mains. This, in itself, is scarcely front-page news; larger mains have been similarly reconditioned and so have much longer ones. However, there are certain details that may interest water-works operators who are contemplating such work in their systems.

The pipeline is one of the main transmission conduits into the city and the reason for cleaning and lining was the necessity of passing more water through it to meet increasing demands. It was laid in 1902, and although it was at that time carefully tar-coated inside and out, a rather heavy coating of tubercles had formed since then, reducing the Hazen and Williams coefficient to about 80.

Last Step in Reconditioning Program

Newark has many miles of old, riveted-steel pipelines of 36-, 42- and 48-inch diameters. Sections of these lines had been cleaned and lined during the past 13 years until all had been reconditioned. There remained only the 60-inch between Cedar Grove Reservoir and Bloomfield Avenue Tower, the latter being a control point in the City of Newark. This was left until last for several reasons. It was not as old as the other lines and not in as bad condition. It is an important link in Newark's water supply and there was a reluctance to place it out of service for an extended period until it was quite necessary to do so.

Since the pipe was laid wholly in city streets, and sections of it ran through high-class residential districts, there was the problem of disposing of the waste water and the accompanying dirt. Finally, there was the question of controlling the flow of water to operate the cleaning machine. Until the installation of cone valves at each end of the portion to be cleaned, there was no way of turning on or shutting off the water except by means of hand-operated gate valves, some of which took a half-hour or more to operate.

Since the other supply lines had been cleaned and lined, and were therefore carrying more water, it was calculated that the 60-inch line could be safely shut down without endangering the city's supply, provided that the work was done at night when the combined cleaning and consumer loads would not exceed the alternate supply.

Consideration was given to the possibility of the simultaneous failure of an alternate supply and the occurrence of a bad fire, and it was stipulated that in such an event the 60-inch line would be restored to service at once regardless of the interruption to work going on at the time.

Waste Water Presents Difficulties

A careful survey was made of means to handle the waste water. No sewers were available that could carry the volume of water needed to propel the cleaning machine. The only stream crossing the pipeline is Second River, a small open-water course about 35 feet wide. The point of crossing is on Bloomfield Avenue, the main thoroughfare in the town of Bloomfield, and a very busy street. If this stream was to be used, and it was the only one available, it meant the discharge of a huge amount of water that would stop all traffic.

As there was no alternative, arrangements were made with the Town of Bloomfield and the Public Service Coordinated Transport, both of which were most cooperative in every possible way. The Public Service Coordinated Transport operates trolley cars and buses on Bloomfield Avenue and a schedule was set up to do the cleaning

at night, at which time the trolley cars were stopped several hundred feet from the pipe opening and the passengers transferred by buses which used other streets to by-pass the flood. The Bloomfield Police Department diverted the traffic and helped in every way.

Three "Shots" Required

The cleaning was done in three runs, or "shots." The first shot was from Bloomfield Avenue Tower to Second River, a distance of about 8,100 feet. This was from the city out toward the reservoir and therefore required water furnished to the city through the alternate supply lines. A careful analysis had been previously made to assure sufficient quantity and at ample pressure to supply all parts of the city and still have enough to run the cleaning machine if the work was done at night.

The second shot was from a point near the reservoir end of the line to a 48-inch disc valve located about 8,600 feet distant. The top half of the pipe at that point was cut away with an acetylene torch for about 7 feet and a bumper welded in the pipe to stop the machine before reaching the valve. The third shot was from the downstream side of the 48-inch valve to Second River, about 15,000 feet.

The builder of the cleaning machine predicted that a pressure of 5 or 6 pounds would be required to start the machine and that it would require a flow of about 40 mgd to keep it going. Both predictions proved to be correct.

How the Cleaning Machine Works

To place the cleaning machine in the pipe, a section as long as the machine is cut out and brought to the surface. The machine is either pulled into the cut-out piece or jacked into the pipe in the ground. In either case the cut-out piece is put back in the line and sealed, either by welding or by bolted half-rings and rubber gaskets. The water is turned on back of the cleaning machine and the pressure moves it forward, up hill, down hill, and around bends until it comes out at the end, moving about 30 feet per minute.

This speed must be carefully controlled by increasing or decreasing the amount of water back of the machine. Air valves on the pipeline must be manned to see that they close properly after the machine passes, and open again in case a partial vacuum is produced by the machine's descending a slope faster than the water can fill in back of it. Likewise, blow-off valves must be open ahead of the machine to pass off waste water and dirt and be closed as soon as the machine passes in order to maintain pressure.

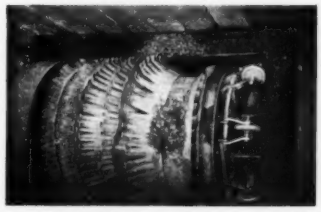
A very accurate control of the machine was obtained by the use of short-wave "walkie-talkie" sets stationed at the control valve and at strategic points such as air valves and blow-offs. A radio-equipped car followed the machine and the operator kept in constant communication with men stationed at all points along the pipeline.

The cleaning machine can usually be heard by anyone walking along over it but on this job a radio oscillator, sealed in a waterproof tube and attached to the back of the cleaning machine, gave a continuous short-wave signal on the same wave-length as the walkie-talkie sets, 42.98 megacycles. If a set, either in the car or a portable set, is placed above the pipe as the cleaning machine approaches, a signal is heard until the oscillator is directly underneath, when a null, or cone of silence, is produced. As the cleaning machine moves on the signal is heard again. In this way the machine can be located in case the men following it lose contact because of traffic noises.

Checks of Flows and Pressures Needed

The cleaning operation appears to be rather simple, but in this case a large amount of detail was encountered in checking flows and pressures in various parts of the system as pressure was gradually built up back of the cleaning machine and as it moved up grade and down grade, with corresponding changes in valve opening to maintain a uniform rate of travel. Hydraulic forces of substantial magnitude are involved in operating a 60-inch cleaning machine and considerable damage can be done if things go wrong. However, between an efficient system of communication to all parts of the job and a type of control valve by means of which large flows of water can quickly be increased or decreased, the movement of the cleaning machine was carefully regulated at all times.

At each end of the line there is installed a 24-inch cone valve. Venturi-type reducers and increasers make possible the reduction from 60 inches to 24 and back to 60 with very little loss in hydraulic head. The cone valves have only a small fraction of the number of turns of the 48-inch disc valves installed elsewhere in the line and therefore can be operated in a very much shorter time. In addition, they can be easily operated by one man, regardless of difference of pressure on the two sides of the valve. It was, therefore, a simple matter to increase or decrease the flow in the pipe by 8 or 10 mgd in less than a minute, if needed.



The 60-inch National pipe-cleaning machine as it emerges from the end of a 15,000-foot "shot." Only the front half is visible. It is intentionally prevented from coming out of the pipe entirely because the sudden drop in pressure might produce a partial vacuum and cause the pipe to collapse.

Cleaned to Bare Metal

Each section of pipe was carefully inspected from end to end after cleaning and it was found that the machine had removed all tubercles and rust down to the bare metal, even cleaning around rivet heads so that practically no hand-cleaning was required. The pipe shows considerable pitting, and although it probably does not average more than 1/16th of an inch, the area affected comprises possibly 80% or 90% of the inside surface.

Some of the pits are much deeper than the average, and the fact that a few leaks have occurred indicate that pitting from the inside has coincided with an outside pit, causing a perforation which had to be repaired by welding. This condition is very much the exception, as the outside of the pipe, wherever excavated, is in very good condition.

The original plate thickness varies from 5/16 to 7/16 of an inch, depending upon elevation and consequent pressure, which is 50 to 150 pounds per square inch. At scattered points on the inside of the pipe, patches of the original tar coating still remain, adhering finally to the pipe. Under these patches the steel is as perfect as when it was installed.

Lining Placed

After the pipe was cleaned and all connection openings plugged temporarily, a cement-mortar lining was placed over the entire inside surface. This was installed by the Centriline Process, which employs an electrically operated machine that places and trowels the mortar.

The mortar is machine-mixed above ground and chuted into small cars that are pushed through the pipe to the rear of the lining machine. The mortar is loaded into the hopper of the machine, from which it is conveyed by a screw to the inside of a rapidly revolving head with slots in the periphery. On the outside of the head, serrated steel plates are set between the slots. As the mortar is squeezed out of the slots, it is forced onto the "comb-plates" and thrown by centrifugal force against the inside surface of the pipe. This produces a fine spray which strikes the

pipe with considerable force, consolidating the mortar and building it up in a dense, homogeneous mass of uniform structure and thickness.

The machine is self-propelled electrically and moves at a uniform pre-determined speed while the conveying screw and revolving head turn at uniform speeds. This results in a definite amount of mortar being placed per linear unit of pipe. The thickness of lining is determined by the speed of the machine through the pipe. Since the center of the machine is set on the axis of the pipe, the layer of mortar is entirely uniform, longitudinally and circumferentially.

Trowels Smooth the Lining

The mortar lining, as placed by the revolving head, has a slightly pock-marked surface, but this is immediately smoothed to a fine finish by revolving trowels on the back of the machine. The lining specified for the 60-inch pipe is 7/16th of an inch thick. This completely covers all rivet heads and the lap joints in the steel plates. The result is a smooth bore inside the pipe and though the lining is, of necessity, built out over rivet heads, it is scarcely noticeable to the eye and will probably have very little retarding effect to the flow of water.

Great care is taken in the mixing of the mortar. Washed sand is completely dried and carefully sieved, then bagged and kept under cover until used. The cement is likewise sieved to remove lumps and possible foreign matter. A supply of these materials is loaded in a covered trailer equipped with a built-in mixer and batching hoppers. Exact amounts of sand, cement, and water are thoroughly mixed and chuted into the small cars or "buggies" which are pushed along the invert of the pipe to the lining machine. The mortar is transferred to the hopper of the machine and the empty buggy is returned for another load.

Several buggies are in use in the pipe at the same time, making a constant stream of traffic in both directions. As it is impossible for two buggies to pass side by side even in a 60-inch pipe, they are so constructed that the empties can be passed over the top of the loaded buggies. The rubber-tired wheels ride on the flanges of the buggy underneath. Each buggy-pusher has a section, or station in the pipe. He receives a loaded car at one end of his section and pushes it to the other end where he receives an empty coming back. He pushes it back to his starting point and the operation starts all over again. As the lining machine gets nearer to the supply hole, fewer pushers and buggies are needed, so that the last man keeps dropping out of line and goes "topside" for other duties.

As the machine backs up, the slack electric cable has to be pulled back and drawn up through the man-way. The lining-machine operator sits at the rear of the machine and observes the placing and troweling of the lining. A floodlight on the machine provides perfect illumination. The operator, in addition to running the machine and releasing the pressure on the trowels as they pass across large openings for connections, also helps transfer mortar into the hopper and makes frequent corrections to the tiller wheel to keep the machine from running up the side of the pipe.

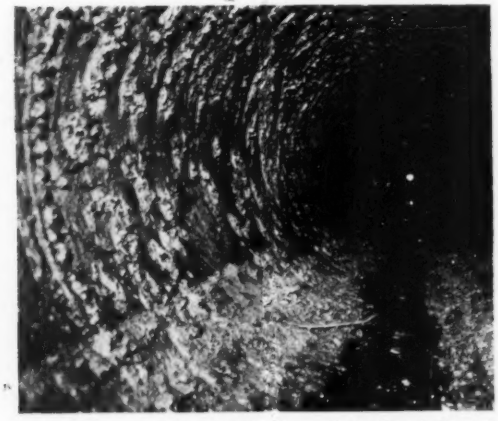
The machine will line around bends. An inspection was made of a 50-foot radius bend and it was lined and troweled as well as the straight pipe, even though it consists of riveted segments.

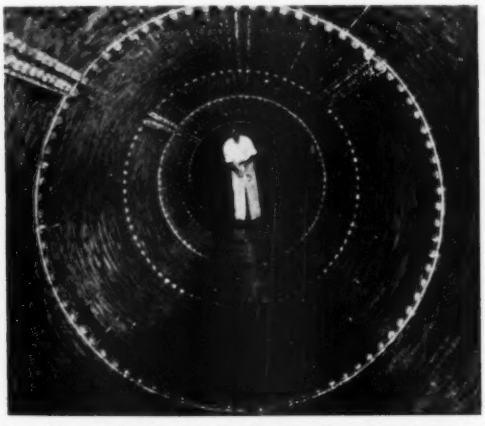
Subsequent tests will show the new coefficient of the pipeline, but from past experience with other cement-lined riveted steel lines, it is expected that a coefficient of 135 or better will be attained.

This is higher than the coefficient of the pipe where it was new, and therefore the lined pipe will have a greater carrying capacity than it ever had before. This increase is due to the fact that the inside surface, although slightly smaller in diameter, is quite smooth, whereas the original surface was studded with rivet heads which, together with the lap joints of the steel plates, had a somewhat retarding effect on the flow of water through the pipe.

As to how long the pipe will retain this high carrying characteristic, time alone will tell. An examination of even the oldest cement lining after 13 years of service in the Newark lines shows no change other than a thin film of slime and a slight change of color for a depth of possibly 1/16th of an inch. As to the life of the reconditioned pipe, that also is hard to foretell. We expect it to last 40 or 50 years. It can be presumed, however, that eventually the steel pipe will rust away in spots on the outside and even though holes two or three inches in diameter may be expected to be bridged over by the lining, the time will come when the pipe must be condemned and replaced. But whether that will be in this century or the next is indeed hard to tell.

The work described above was done under contract with the Centriline Corporation of New York City. The cleaning was done under sub-contract by the National Water Main Cleaning Company of New York City. The work was under the direction of William G. Banks, Division Engineer of the Newark Division of Water.





Left: A view inside the 60-inch steel pipeline before cleaning. These tubercles cut the effective flow characteristics almost in half. Right: This is the way the line looked after cleaning and before lining.

Zoning of Industry

Some Problems and Recommendations

For some reason, in discussion on zoning ordinances, industry is generally relegated to the unfortunate position of the unwanted step-child or the poor relative—although it is neither unwanted nor poor. Perhaps this is because in our hierarchy of zoning uses, industry is the "lowest" of all. Maybe this low rank also has something to do with the appalling number of variances and non-conforming uses which occur in some cities. Could it be that if all uses were given equal status and we approached the zoning of our cities from the positive viewpoint of over-all planning, rather than on a negative permissive basis, there would be less need for circumventing the zoning ordinance? Since there are numerous ties drawing factories to each other, as well as to residences and business, the problem of isolating industrial nuisances is naturally a difficult one.

By **ARTHUR BASSIN**
City Planner
Chicago 3, Ill.

THE simple establishment, in a zoning ordinance of an industrial district where business and residence are also permitted, has not afforded sufficient segregation under the law in most states. Court action, initiated by occupants of property subdivided for residential use after the establishment of an industrial district, has jeopardized the future of many a well-developed heavy industrial district. There have been cases where large national concerns seeking plant sites of extensive area finally selected locations miles away from their local markets, due to the fear that residential developments, which might encroach on a closer-in location, would restrict their manufacturing operations.

Quite frequently adequate separation is also lacking between industrial operations of different types. For instance, a machine shop producing highly polished products will be materially damaged where the air is permeated with dust from some adjoining industry. Likewise, there may be general losses in efficiency if employees are nauseated by fumes or odors from an adjacent plant.

Factories and Workers' Homes Often Too Far Apart.—At the same time, as a result of industrial districts' being designed to include a conglomeration of various types of industry, there are frequent instances where factories, even those of a non-nuisance nature, are required to locate much too far from their workers' homes. Plainly, it works against the interests of all concerned when factories are unnecessarily confined to areas remote from residence, so that transportation becomes more and more difficult, irksome, and expensive.

Zoning Based on Inadequate Estimating.—The success with which a zoning ordinance provides for industrial uses lies to a great extent in the estimates regarding future trends and developments made by the zoning agency.

The lack of adequate estimating is generally detrimental to the industrial interests involved, but it is apt to bear even harder upon the municipality, and ultimately upon its citizens. Frequently, a block is expected to become industrial but later is developed for light residence or light commercial use. The land has thus been saddled with an expense of hundreds of dollars per acre for certain types of unnecessary sewerage facilities, streets, paving, etc. Under this burden its development cannot proceed to the best advantage. In fact, development has often actually been impaired in this way through retarded sales, a large percentage of vacant lots, and a consequent impairment of the city's annual tax returns.

Industrial Frontage May Create Dead Spot.—Pressure is frequently exerted to locate a non-nuisance type of industry in a business area, and its failure to create a nuisance is usually cited as a compelling reason. The merchandising ability of a shopping district is directly proportionate to the character which it presents to its customers. Yet the frontage of industrial property, even when well cared for, has a relatively unused character. Thus, the frontage of an industrial establishment is likely to create a "dead" spot on a business street and indirectly affect its attractiveness at that point. Although this consideration would probably not carry much weight from a police-power viewpoint, it does raise a serious question from the standpoint of the business community's welfare.

Application of Zoning Too Limited.—One of the most distinct problems connected with zoning ordinances relates to the manner in which they are administered to industrial uses. Many an undesired ice plant has slipped into a commercial district on the strength of its function as a service industry, and many a junk yard has caused havoc in an otherwise peaceful residential district. Edward M. Bassett cites one noted junk yard case* which caused the downfall of use-zoning in St. Louis, before zoning was reestablished under a state enabling act.

The effect of zoning ordinances is also distinctly retarded by the unevenness of their application throughout a competitive region. In such an area it is obviously desirable that any step which may be taken toward the control of industrial nuisances should be adopted, more or less, by all communities which are in a position to attract the same industry. Otherwise, all will be reluctant to adopt a measure that might be frowned upon as restrictive, and thus give a competitor community a seeming advantage. This jockeying for position may often be at the bottom of a city's slowness in adopting provisions for the zoning of industry, despite the fact that many types of industry would look upon them with great favor.

Recommendations

Base Zoning on a Comprehensive Survey and Plan.—It becomes increasingly clear that the zoning of industry, along with the rest of zoning, must be based upon a comprehensive survey and

* *City of St. Louis v. Evraiff.*

a master plan for the community, if it is to fullfil its function of protecting the welfare and prosperity of the community's citizens.

Zoning surveys have seldom gone into implications of industrial location sufficiently to provide a basis for arriving at an adequate estimate of the community's real prospects in attracting (or losing) additional industry.

If zoning is to be such as to permit sound municipal investment in public works and utilities, a thorough industrial survey must be made to determine not only that the community will get more industries, but also what specific types they are likely to be and about how much of each type. Factory zones must be properly related to workers' homes and, wherever necessary, the two must be connected by adequate transportation facilities. In the final analysis, nothing short of a comprehensive plan for the urban area can locate the industrial districts satisfactorily. Lastly, if the community is to know how its zoning regulations are related to its industrial position in the region as a whole, it must obviously have a broad view. From the industrial viewpoint, these considerations, as well as others, spell out the need for a thorough industrial survey and the formulation of a master city plan preceding the drafting of a zoning ordinance.

Stronger Zoning Provisions in the Peripheries.—Related to the above recommendation is the suggestion that county zoning in urban peripheries be strengthened. Nothing appears to be more certain on the industrial scene than that the location of the large bulk of America's factories is oriented toward the areas surrounding cities. As regards industrial development, it is probably even more important now that these peripheral areas be properly zoned rather than the central cities themselves. Historically, county governments in this country have been weak. Furthermore, the interests of a metropolitan industrial area generally transcend the domain of the county, and often even the state. Therefore, it is suggested that states set up regional zoning commissions to zone the metropolitan areas outside of cities, and collaborate with the central cities (and with similar bodies in other states, when necessary) to formulate coordinated metropolitan zoning ordinances. Something of this sort appears to be absolutely necessary if regions are to realize their industrial potentialities.

Use More Definitive Industrial Classifications.—Zoning ordinances should go beyond the common concept of nuisances in classifying industries and industrial districts, and take into consideration protection of the economic welfare of the municipality, its citizens, and its industries.

Thus, by careful investigation, industries may be classified according to their needs, their requirements in municipal facilities and services, and their possible relation to workers' homes. On the basis of this it certainly would be possible to establish a greater variety of industrial districts than is now used. This, in turn, would lend much greater flexibility to the inner adjustment of the community and to its growth. The increased benefits thus derived would, no doubt, far outweigh the increased detail in zoning administration. Its legality would probably hinge on whether the community's prosperity may legally be considered as part of its welfare.

Bar Residential Uses from Industrial Districts.—The more advanced ordinances already have provisions prohibiting residential uses in industrial districts, and there appears to be no good reason why this should not become universal policy.† Furthermore, the law may be so constituted that a resident in an industrial zone is estopped from complaining against a factory properly located in such a zone. The application of the latter provision, however, must take into consideration the existence of poor zoning and the lack of adequate controls over development in the past. It might, therefore, be best applied only to future construction. To have real meaning, such a provision would probably also have to be accompanied by a program for redevelopment and the rehousing of present residents of obnoxious industrial districts.

Abatement and Bounding of Nuisance.—Zoning policy and administration should be based upon the recognition that certain industrial nuisances largely can be abated. Many industries formerly considered in the nuisance classification have eliminated all of their objectionable features through the adoption of modern plant equipment and operating methods. Often the prevention of the dissemination of smoke, fumes, odors, and dust has resulted in distinct economies to the industry.

Still, for some time to come, even under the most favorable conditions, there are likely to be cases where nuisances are not controlled and eliminated at the source. In such cases the zoning ordinance might require that the spread of the nuisance should be contained within the limits of specified boundaries whose area could vary. For instance, in some cases the boundaries might extend to the limits of the particular district while in others they might be confined to the perimeter of an individual industrial property. Such an intermediary form of control would, of course, require considerable case study, and might prove helpful, under certain circumstances, in achieving the desired result.

Tighten Control on Encroaching Industries.—The control of such troublesome industries as junk yards and others which tend to encroach on unsuited areas primarily requires tighter admintrative enforcement. Such establishments should be effectively limited to industrial districts. Industry as a whole should support this stricter control, since anything that tends to undermine the general effect of the zoning ordinance, thereby tends indirectly to injure the industrial community.

† A recent study by the Urban Land Institute (1737 K Street, NW., Washington 6, D. C.) of the zoning ordinances of 68 cities of over 50,000 population revealed that 25 of them had some form of prohibition against residential or institutional uses in one or more of their industrial districts. The Institute's Technical Bulletin No. 10, on "The Prohibition of Residential Developments in Industrial Districts," discusses this problem at some length, including its legal aspects, and lists the distinctive features of the ordinances mentioned.

EDITOR'S NOTE: See also discussion on recent Cresskill, N. J., zoning decision by Norman Williams, Jr., on page 153.

Financial, Supply, and Price Conditions For Water Works Construction

FROM the basis of financing, waterworks construction is good today for municipalities, but not for private companies. From the supply and price angle, conditions are not so rosy. This opinion was expressed by Thomas H. Wiggin, consulting engineer, in a report delivered at the recent American Society of Civil Engineers' annual meeting.

The increased post-war industrial use of water was one unusual and unanticipated effect. Construction of new homes required many new services and extensions. The high industrial load resulted from "cold-war" needs, foreign-aid requirements, and the accumulation of depression difficulties.

Pipe delivery still causes complications in the present water-works picture. Cast-iron pipe remains scarce, although there is some improvement reported. Reinforced concrete pipe has risen in price, but can in general be obtained more promptly than metal pipe. However, its use is still mairly restricted to large mains.

Pumping units have risen in price, although delivery is better. Electric motors appear slower in delivery than the pumps.

The cost of steel tanks has risen also, and delivery is slow. In some cases the tank manufacturers refuse to paint them because of labor difficulties. The use of prestressed concrete tanks at ground level appears to be growing.

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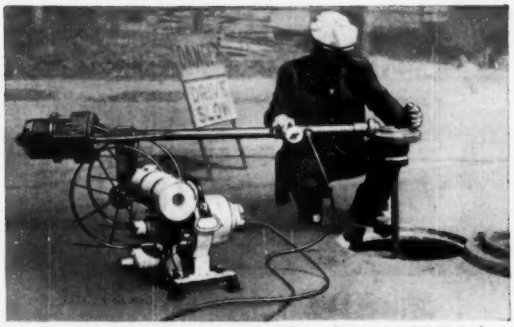

Water dept. uses this Toledo Power Drive with a portable generator to open and close street valves.

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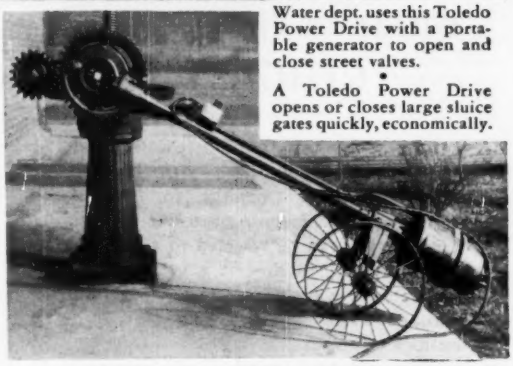
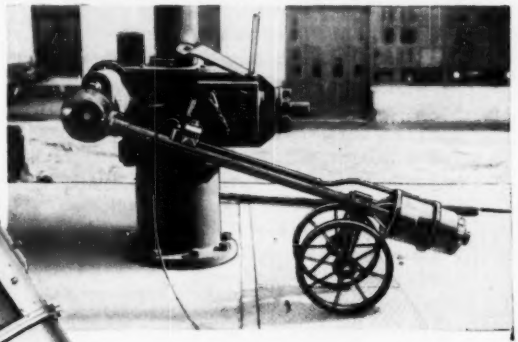
A Toledo Power Drive opens or closes large sluice gates quickly, economically.



30 man hours are saved each time this Toledo Universal Power Drive opens or closes this big 9 ft. x 12 ft. sluice gate.



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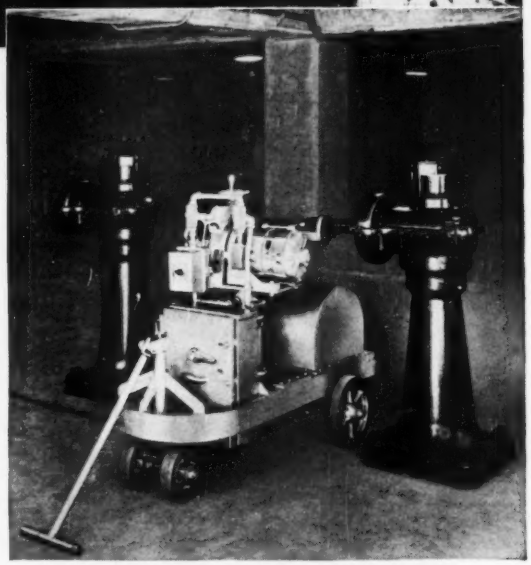

The *Portable "Limitorque"* shown directly above was built to the exacting specifications of the Filtration Division Engineers, City of Chicago, Ill. The photo at the top of the page shows a general view of the Filtration Plant taken from South Breakwater Light. (All photos courtesy of South District Filtration Plant at Chicago, Ill.).

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How to Find Buried Pipe

Electronic locaters find pipe and detect leaks at low cost

By GERHARD R. FISHER
President
Fisher Research Laboratory, Inc.
Palo Alto, Calif.

THE use of electronic pipe locators and leak detectors has proved these instruments to be of great economical value in both time and money. Both instruments are portable and designed for use above ground. There are no connections to the underground or buried pipe itself.

Will Determine Exact Position

The electronic pipe locator will determine the exact position of a buried pipeline or metallic conductor, and it will also indicate pipe bends, dead ends, drip boxes, cast-iron bells, insulated points, stubs or services, or any metallic hazard in the path of a ditcher. It is also capable of locating the exact center of a buried pipe, and of determining the depth of the pipe beneath the surface. In addition, it may be used to trace the course of an underground line without contact with the line itself.

Two Units in Locator

The pipe locator consists of two specially designed radio units, a transmitter and a receiver, each housed in a separate box. In operation, the transmitter sends out a continuous signal, and when there is no metal interposed between the two units, a definite volume of sound is heard in the earphones of the receiver, and a meter mounted on the receiver gives a definite reading. If a metal object lies between the two units, however, the sound heard in the earphones will be louder and the meter reading higher.

Instead of operating the transmitter and the receiver separately, they can be connected with a carrying handle, permitting one-man operation, as illustrated. By means of these pipe finders, it is possible to trace pipes to a distance of 500 to 1,000 feet, and to a depth of 20 feet. The equipment weighs only 10 pounds, and is not larger in size than an ordinary typewriter.

Leaks Spotted Exactly

Should pipelines develop leaks, the exact location can be determined by the leak detector without actual contact with the pipeline itself. Any fluid under pressure escaping through a hole, such as a puncture in a pipeline, sets up vibrations which travel a considerable distance along the pipe. A very sensitive crystal pick-up and an amplifier capable of a high degree of amplification, with a meter or headphone incorporated in the leak detector, will give a visual, as well as audible, indication. Interfering traffic noises can be reduced by means of a frequency filter.

Maximum sound appears over the pipe.

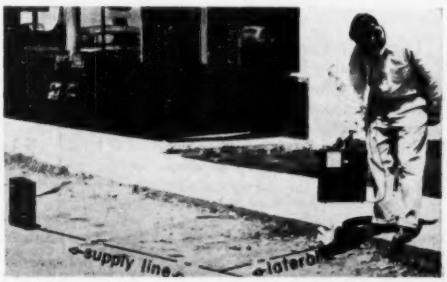
Simple to Operate

It is simple to operate these leak detectors once the pipeline has been located with the pipe finder. The exact location of a leak as determined by the instrument is seldom missed by a distance of more than 9 inches. It is apparent, therefore, that great savings may be realized through use of the instrument. In such metropolitan areas, where the cost of tearing up pavement exceeds $4 per square foot, one small hole through the pavement generally provides sufficient room to make repairs if the location of the leak is definitely known. If the location of the leak has not been determined by a suitable detector, the only method of finding it is to tear up the pavement at intervals along the line until the location is found.

Used in Plant Buildings

A similar leak detector has been designed for use in plants, and is of special value in connection with radiant-heating systems which are permanently imbedded in the floors of buildings. A leak in a radiant-heating system will cause much trouble and excavation unless the exact location can be determined by means of a leak detector.

Tracing a leak through a hydrant.



Laterals can be located easily.

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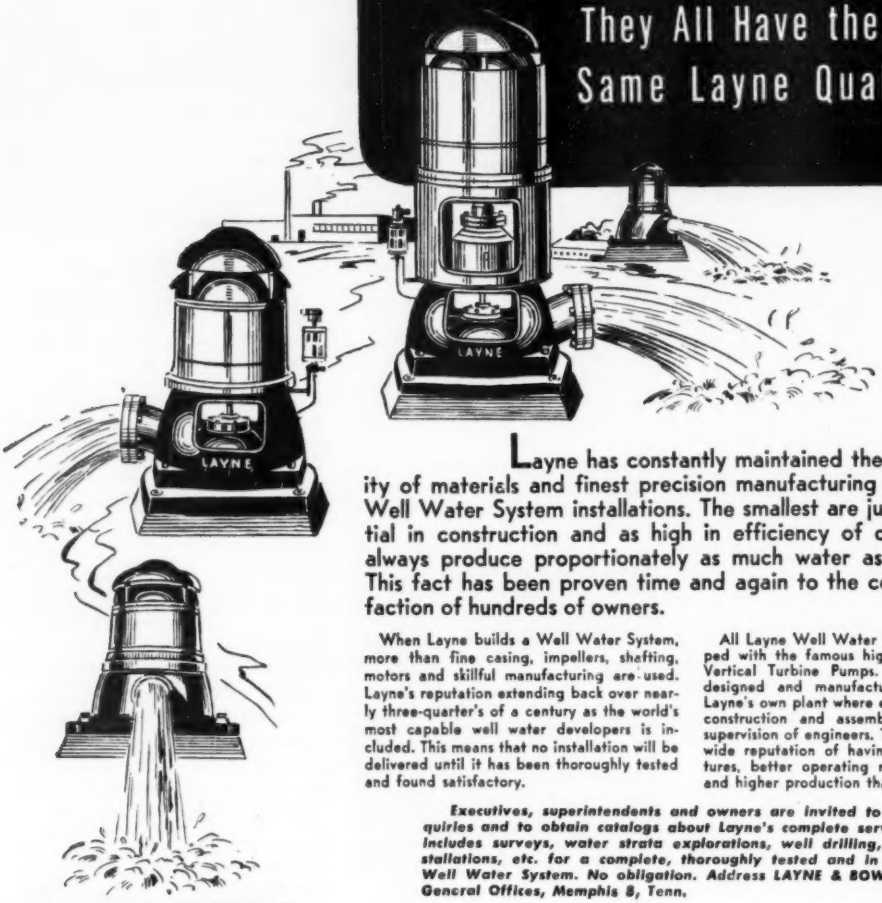

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.

Total Exclusion of Manufacturing—Regional Planning and Zoning

NEW JERSEY, *Duffcon Concrete Products v. Borough of Cresskill*, 64 Atlantic (2d) 341 (New Jersey Supreme Court, March 7, 1949).

IN THIS decision the lower Court opinion, reported in THE AMERICAN CITY for December 1948, page 149, was unanimously reversed by the new New Jersey Supreme Court.* The present forthright opinion by Chief Justice Vanderbilt raises important issues as to the relationship between zoning and regional planning, and as to the trend of New Jersey zoning in particular. Moreover, the opinion has been greeted in almost ecstatic terms by the local New Jersey press.

Cresskill is a small residential suburb in northern New Jersey, north of the George Washington Bridge and within the New York metropolitan area. Like most metropolitan suburbs, the community has been determined to preserve its predominantly residential character. The zoning ordinance therefore provided three residential districts and one "commercial district for business centers," and the regulations for the latter district contained elaborate provisions restricting manufacturing to very small-scale operations.

Those regulations forbade manufacturing under the following conditions:

1. Where mechanical power of over one horsepower is used, and
2. Where goods are produced for sale except at retail on the premises, or where services are performed except for the residents of the locality, and
3. Where over five workers are employed, except that cleaning and dyeing and a few other operations are limited to from one to three workers.

No other provision was made, except by variances, for industrial development within the borough.

In 1946 the Duffcon Company—without any permit—began manufacturing concrete slabs on an open plot in the borough, within the commercial zone but near a residence zone and a public school. About forty men were employed, and the operations produced noise, vibration, dust and traffic. After several months, the Company applied for a permit for a building for the same use—but this was eventually denied. The New Jersey Courts first ordered, and now have finally refused to order, the issuance of such a permit.

While the ordinance excludes almost any manufacturing except for handicrafts, the opinion upholding it concentrated on the issue in the present case, the exclusion of an industry which could appropriately be classfied as "heavy." In this connection the decision contained an excellent statement on the blighting effects of heavy industrial uses on nearby residences, and the importance of segregating the two uses by providing sufficient and appropriate land for each.

AN ESSENTIALLY NEW JUDICIAL VIEWPOINT

Moreover, this decision set forth an important and essentially new judicial viewpoint for the evaluation of zoning regulations. The state enabling act directed that, in each town, zoning should encourage the most appropriate use for all land. In construing this provision, the Court held that the "most appropriate use" of any parcel of land within any municipality must be determined in accordance with the needs of the surrounding region as a whole—in other words, in exactly the way in which the determination would be made by proper planning technique. In fact, both industrial and residential development proceed on a region-wide basis, with no particular regard for municipal boundaries laid out long ago for long-forgotten reasons. Moreover, the 20th-century advances in public transportation have encouraged the concentration of industry within each region into those locations suited for its special needs; and such locations do not necessarily always occur within the boundary of every existing municipality. For example, in the present situation—taking Northern New Jersey as the appropriate regional unit—the Hackensack Valley provided plenty of land for industrial development, while suburban areas such as Cresskill could be most appropriately developed for residential and local retail uses. Or so the argument goes.

As far as New Jersey lawyers and city officials are concerned, the chief significance of this decision lies in the tone of the opinion. The typical recent New Jersey decisions have become a rather painful standing joke among all those interested in city planning: the list of techniques which have been declared unconstitutional by the lower courts during the last year or two reads like a catalogue of the most valuable planning devices. In contrast, the present opinion gives reason to hope for a new trend, reversing the old one. The new highest New Jersey Court may lead the lower courts away from constant interference with the exercise of the usual city-planning powers. Even if it does so, aberrational decisions must probably be expected to continue sporadically over the next few years.

FORWARD LOOKING—AND REACTIONARY

As a result of the Court's emphasis on regional planning, this opinion is in many respects one of the most forward-looking zoning decisions in years. If regulations on land use can be evaluated in terms of the needs of a region as a whole—or, for that matter, perhaps even of a city as a whole—there will be no legal obstruction to carrying out any well-thought-out plan for guiding local economic development. In effect, planners will only be required to do their own work carefully and realistically. The philosophy of judicial review expressed here is thus all to the good.

Nevertheless, the specific trend in regional development exemplified by the Cresskill ordinance, and approved in the opinion, is basically reactionary. The trouble is that the planning techniques for which this opinion clears the way represent the best planning thought of twenty years ago. The ideal of a purely residential suburb, with an ordinance excluding even attractive light industry, is essentially a snob ideal, quite unrelated to the proper aims of zoning. It is, of course, obvious that all industries involving danger or producing nuisances of any kind—smoke, odor, noise, vibration, traffic, and so on—should be excluded from residential areas. However, a new type of non-nuisance light industry has been developed, largely as a result of the shift in the power base from coal to electricity. Developments of this type can be an asset in or near many residential areas, if zoning regulations forbid any nuisance-producing industries, and also require low bulk and coverage. The various nuisance factors are all physical, and engineering techniques are already being developed to measure most of them. The trend of future zoning will be toward basing regulations directly upon measurement of nuisance; for example, eventually the regulations would exclude an industry from a district if it produced more than so many decibels of sound, pounds of sootfall, etc. Moreover, modern urban and regional planning has been devoting increasing attention to bringing residence and employment closer together, by encouraging the development of light industry in outer suburban areas. Such more-balanced development, if permitted to proceed, could contribute to several desirable trends. The fantastically wasteful current practice of long commuting could be cut down, and congestion on transit facilities thus relieved. Moreover, a stronger and more stable economy and pattern of land use could be developed in both central and outer areas of a metropolitan region.

* Until recently, in New Jersey (as in New York and a few other states), the term "Supreme Court" was used for the lowest court of general jurisdiction, and the highest court in New Jersey was called the Court of Errors and Appeals. Under the new New Jersey Constitution, however, the term "Supreme Court" is used for the new court of final appeal.

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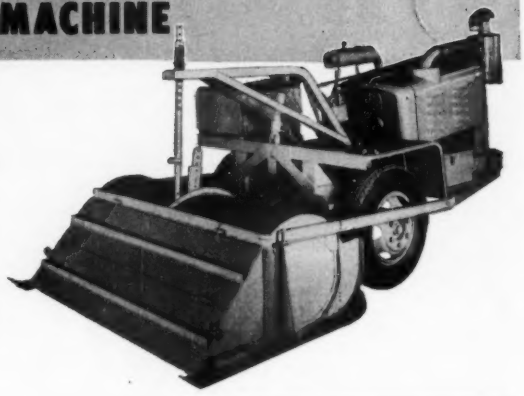

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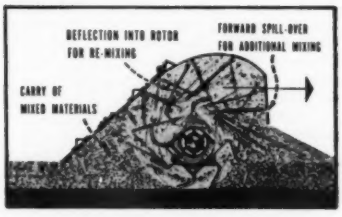

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Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Assessments—Street Improvements—City Council's Determination of Value as Final and Conclusive

In action against city to enjoin collection of special assessment to pay cost of street improvement, alleging amount of assessment exceeded benefits conferred on plaintiff's property, held, in denying injunction, that city council's determination that amount of assessment does not exceed value of special benefits conferred, in absence of fraud or abuse of discretion, is final and conclusive. *Struble et al.* v. *City of Cincinnati et al.*, 82 N. E. (2d) 127 (Ohio, App., March 1, 1948).

Bonds—Public Utilities—Validity of Ordinance Where City Fails to Make Clear Which Statute Applied

Where ordinance authorizing submission to vote of electors the question of issuance of bond for construction of electric-light plant, and notice of election and election ballot did not state clearly whether general-obligation or revenue bonds were to be issued either of which were authorized by statute, held that ordinance was invalid because it failed to make clear under which statute city was proceeding. *Eastern Kansas Utilities* v. *City of Paola*, 196 Pac. (2d) 199 (Kans., July 10, 1948).

Building Permits—Vested Rights of Applicant Where Construction Begun Prior to Approval of Application

Where applicant for building permit had substantially complied with requirements of building code and zoning ordinance of Village of Great Neck and placed orders for materials and proceeded with construction in reliance on assurances from village officials that no legal grounds existed for denying application, and officials changed zoning ordinance prior to approval of application, held that applicant had acquired vested rights, and was entitled to permit, notwithstanding subsequent modification of zoning ordinance. *Atlas* v. *Dick*, 81 N. Y. S. (2d) 126 (N. Y. Sup. Ct., Nassau Co., Apr. 10, 1948).

Buses—Rates of Fare—Power of State Commission to Fix Where Operated Under City Franchise

In action by city against state public-service commission and omnibus company for order declaring fares set by commission to be illegal and commanding commission to desist from enforcing same, held that although cities may control conditions under which their streets shall be used by bus lines, and may make enforceable contracts in their franchise agreements, provisions of such contracts must yield, if inconsistent, to power of state to fix rates of fare. *City of Rochester* v. *Public Service Commission et al.*, 83 N. Y. S. (2d) 436 (N. Y. Sup. Ct., Albany Co., June 12, 1948).

Bus Franchise—Gross Receipts—Computation of Where Company Leases Advertising Space

Where bus company's franchise required company to pay fixed percentage of gross receipts to city "from whatever source derived" in connection with operation of route, and company leased privilege of installing advertising cards in buses and bus company received percentage of amount advertisers paid lessee, held that city's franchise percentage was to be computed by including only amount bus company received from its lessee rather than including gross received by lessee. *Madison* v. *New York City*, 82 N. Y. S. 270 (N. Y. Sup. Ct., N. Y. Co., June 7, 1948).

Charitable Institutions—Liability of City on Contract with to Reimburse For Relief Expenditures

In action by non-profit corporation against city to recover for poor relief allegedly expended on behalf of city under contract promising reinbursement, held that petition was demurrable for failure to allege appropriation by city council of amount claimed by plaintiff as required by statute and charter forbidding municipal expenditure of money unless appropriated *Industrial Rescue Mission* v. *City of Columbus*, 81 N. E. (2d) 254 (Ohio, App., Feb. 19, 1948).

Charters—Home-Rule City—A Legislature's Power to Act in Matters Affecting Transportation

In action by electors to compel city officials of New York City to act on petition for submission to electors of city charter amendment which would take from board of transportation and mayor powers granted to them under Rapid Transit Act, held, that since provisions of charter and act conflict, state legislature is empowered to act in matters affecting city's transportation, notwithstanding City's Home Rule Law. *Connelly* v. *Stand et al.*, 83 N. Y. S. (2d) 445 (N. Y. Sup. Ct., N. Y. Co., Oct. 1, 1948).

City Council—Vacancy—Party Affiliation

Where New York City Charter provided that vacancy in city council should be filled by election by city council of person of same political party as the prior incumbent if such incumbent was elected as candidate of political party, held vacancy created by death of deceased communist councilman need not be filled by communist since communist party was not a party within meaning of election code, having polled less than 50,000 votes in gubernatorial election. *Melzer* v. *Isaacs et al.*, 82 N. Y. S. (2d) 18 (N. Y. Sup. Ct., N. Y Co, July 21, 1948).

Competitive Bidding—Sale of to Federal Government Without Advertising for Bids

Where city with city manager form of government sold land by ordinance to Federal Government for consideration of $10,000 fire protection for city and erection of $25,000 building on land, held that since city had not made provisions of General Code part of its basic law, statute requiring competitive bidding for sale of land by cities did not apply, notwithstanding plaintiff offered $1,500 for realty. *Hugger* v. *City of Ironton et al.*, 82 N E. (2d) 118 (Ohio App., Aug. 12, 1947).

Contracts—Boardwalk Concessions—Authority of Mayor to Execute

In action to set aside resolution of borough authorizing bids and leasing of boardwalk concessions, held lease previously entered into by mayor and petitioner was invalid in the absence of public ratification since there was no statute or ordinance conferring such power on mayor. *Anschelewitz* v. *Borough of Belmar*, 61 Atl. (2d) 293 (N. J., Sept. 10, 1948).

Electricity—Power of City To Enlarge Plant

Where city ceased using its electric light and power plant and bought all electric energy from outside sources, held that voters having originally authorized purchase of plants by city could not enjoin city from purchasing, without vote of electors, equipment for enlargement and improvement of old plants. *Slepicka et al.* v. *City of Wilbur*, 34 N. W. (2d) 646 (Nebr., Nov. 12, 1918).

Fireman—Permanent Disease Not Within Statute Providing Pension For "Injury" While Off Duty

In action by fireman to compel city to retire petitioner and pay him pension, held that statute providing pension for fireman sustaining injury while not on duty was not broad enough to include petitioner's disability resulting from congenital anomalies and arthritis. *State ex rel. Tilkens* v. *Firemen's Pension Fund of City of Green Bay*, 34 N. W. (2d) 248 (Wis., Oct. 12, 1948).

Flood Control—Validity of Statute Granting Cities and Counties Power To Provide Works for

Where state auditor refused to register notes of city and county, for purpose of constructing flood-control works, on ground statute authorizing same was unconstitutional, held that statute was valid exercise of legislature and writ of mandamus would issue to compel state auditor to register notes. *Board of Commissioners* v. *Robb; City of Wichita* v. *Robb*, 199 Pac. (2d) 530 (Kans., Nov. 13, 1948).

Intoxicating Liquors—Licenses—State and Municipal Regulation

Where complaining party had been issued retail beer license by State Beverage Control Board and was denied license by City of Newport since quota fixed by ordinance had already been reached, held city had power to regulate liquor traffic under general grant of powers and where State Board had not established quota for city it was not mandatory for city to issue license, there being no conflict between local and state regulations. *Deckert et al.* v. *Levy*, 213 S. W. (2d) 431 (Ky., June 25, 1918).

Intoxicating Liquors—Refusal of City To Issue License Where Applicant Licensed by State

Where state-liquor-license holder tendered municipal license tax to city, which refused to accept it, claiming license had been issued by state in excess of the number authorized, held that as license fee was "tax," plaintiff was entitled to be free from interference by city with conduct of business and city could not refuse fee. *Bateman* v. *City of Winter Park*, 37 So. (2d) 362 (Fla., Oct. 26, 1948).

Intoxicating Liquors—Validity of Ordinances Prohibiting Sale Of Beer on Sunday

In action against city to enjoin enforcement of ordinances prohibiting sale of 3.2 beer on Sunday, held that ordinances were valid police-power regulations, and did not violate general welfare and due-process clauses of state constitution, nor deprive tavern operators of rights granted them by their licenses. *Nichols* v. *North Kansas City*, 214 S. W. (2d) 710 (Mo., Nov. 8, 1948).

Licenses—Denial of for Operation of Bowling Alley Near Commercial High School

Where License Commissioner of City of New York denied license for operation of bowling alley on ground that bowling alley adjoined large commercial high school for girls and would tend to encourage delinquency, held that denial of license was not arbitrary exercise of discretion so as to authorize Supreme Court to interfere with discretion of commissioner. *Erwich Bowling Center, Inc.*, v. *Canella*, 82 N. Y. S. (2d) 192 (N. Y. Sup. Ct., N. Y. Co., Sept. 18, 1948).

HERE'S BIG SHOVEL PERFORMANCE IN A SMALL MOBILE UNIT

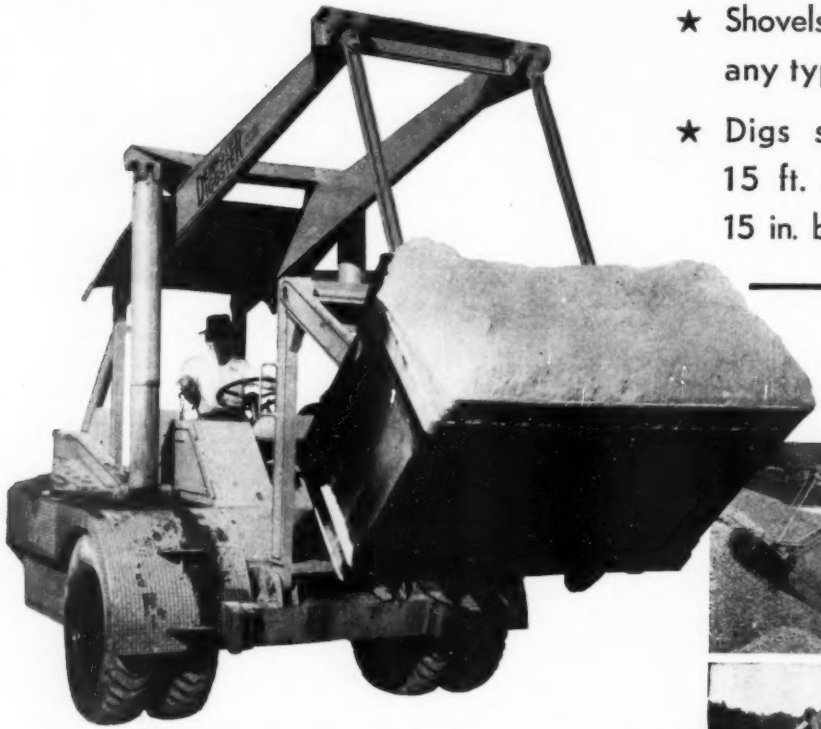
DEMPSTER DIGGSTER

TRADE MARK

THE AUTOMOTIVE HYDRA-SHOVEL THAT-

★ Shovels and Loads any type material

★ Digs solid earth 15 ft. above and 15 in. below grade



Here is a rubber tired automotive shovel that is equally at home in excavation work; in stockpiling, loading or on the road. It is the most compact and maneuverable, one-man-operated, rubber tired automotive shovel and loader available. It is the only machine built with simultaneous but independent hydraulic crowd and hoist action. Variable crowd action at any dipper position means it can dig lower—15 inches below grade. Exclusive hoisting action means it can dig higher—digs out a 15 ft. bank. Extraordinary dumping height and reach means easier loading, even distribution of load in the largest of trucks. Dempster-Diggster buckets are easily interchangeable. For digging, a 1 cu. yd. (heaped) bucket with hardened steel teeth is used. For loading work, stockpile buckets are available in 1¼, 1½ and 2 cu. yd. capacities. Hoisting, Crowding, Steering and Braking are all 100% hydraulic.

Large photo above shows close-up of Dempster-Diggster with 2 cu. yd. stockpile bucket loaded. At right, top: Loading crushed stone. Center: Diggster dumps crushed stone into truck. Right, bottom: Digging out a high bank.

DEMPSTER BROTHERS INC.

Write today for complete information.

859 Dempster Bldg. **Knoxville 17, Tenn.**

Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

May 9-11—Detroit, Mich.
ASSOCIATION OF STATE PLANNING AND DEVELOPMENT AGENCIES. Annual Meeting (Hotel Book Cadillac). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

May 10-12—Los Angeles, Calif.
AMERICAN PUBLIC POWER ASSOCIATION. Annual Convention (Hotel Ambassador). Gen. Mgr., Carlton L. Nau, 1757 K St., NW., Washington 6, D. C.

May 12-14—Bellingham, Wash.
AMERICAN WATER WORKS ASSOCIATION—Pacific Northwest Section. Annual Meeting (Hotel Bellingham). Exec. Sec., Fred Merryfield, Prof. San. Eng., Oregon State College, Corvallis, Ore.

***May 16-18—Monroe, La.**
LOUISIANA MUNICIPAL ASSOCIATION. Annual Meeting (Hotel Virginia). Sec.-Treas., Mrs. Henry Jastremski, City Hall, Baton Rouge 10, La.

May 16-19—San Francisco, Calif.
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Meeting (Hotel Fairmont). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston, Mass.

May 17—Essex Fells, N. J.
AMERICAN PUBLIC WORKS ASSOCIATION—New York-New Jersey Chapter. Annual Meeting (Public Works Bldg.). Sec.-Treas., W. S. Foster, 11th Floor, 470 Fourth Ave., New York 16, N. Y.

May 17-18—Washington, D. C.
NATIONAL PUBLIC HOUSING CONFERENCE. Annual Meeting (Hotel Statler). Exec. Vice-Pres., Lee F. Johnson, 1015 Fifteenth St., NW., Washington 5, D. C.

***May 18—Waterville, Maine**
MAINE MUNICIPAL ASSOCIATION. Annual Convention (Hotel Elmwood). Exec. Sec., Leigh Webber, 95 Water St., Hallowell, Maine.

***May 18-19—Tucson, Ariz.**
ARIZONA MUNICIPAL LEAGUE. Annual Meeting (Hotel Pioneer). Exec. Sec., Joseph C. Furst, 15 South First Ave., Phoenix, Ariz.

May 23-26—Detroit, Mich.
MUNICIPAL FINANCE OFFICERS ASSOCIATION OF THE UNITED STATES AND CANADA. Annual Meeting (Hotel Statler). Exec. Dir., Miner B. Phillipps, 1313 E. 60th St., Chicago 37, Ill.

May 25—Bristol, Conn.
NEW ENGLAND SEWAGE WORKS ASSOCIATION. Spring Meeting. Sec., Walter E. Merrill, State Dept. of Public Health, 511A State House, Boston, Mass.

May 25-27—Chicago, Ill.
NATIONAL INSTITUTE OF CITY AND TOWN CLERKS. Annual Conference (Hotel Sherman). Exec. Dir., Philip P. Costello, City Hall, Perth Amboy, N. J.

May 27-28—York, Pa.
EASTERN ASSOCIATION OF FIRE CHIEFS. Annual Convention (Hotel Yorktowne). Sec., Charles E. Clark, Box 271, Wayne, Pa.

May 30-June 3—Chicago, Ill.
AMERICAN WATER WORKS ASSOCIATION—National Convention. Annual Convention (Hotel Stevens). Exec. Sec., Harry E. Jordan, 500 Fifth Ave., New York, N. Y.

***May 31—Washington, D. C.**
NATIONAL CONFERENCE ON AMERICAN AID TO REBUILD GERMAN CITIES (Hotel Washington). Sec., Edward A. Fleckenstein, 39 King Ave., Weehawken, N. J.

June 1-3—Hot Springs, S. Dak.
SOUTH DAKOTA MUNICIPAL LEAGUE. Annual Meeting. (Hotel Evans). Sec., R. D. Falk, University of South Dakota, Vermillion, S. Dak.

June 1-3—Washington, D. C.
PRESIDENT'S HIGHWAY SAFETY CONFERENCE (Departmental Auditorium, Federal Works Bldg.). Gen. Chr., Major Gen. Philip B. Fleming, Federal Works Administrator, Washington 25, D. C. Exec. Dir., Rudolph F. King, Federal Works Bldg., Washington 25, D. C.

June 2-3—Hoquiam, Wash.
ASSOCIATION OF WASHINGTON CITIES. Annual Meeting (Hotel Emerson). Exec. Sec., Chester Biesen, 262 J. Allen Smith Hall, University of Washington, Seattle 5, Wash.

***June 6-7—Kingston, N. Y.**
NEW YORK STATE SEWAGE WORKS ASSOCIATION. Sec., A. P. Dappert, New York State Board of Health, Albany, N. Y.

June 6-10—Quebec, Canada
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Meeting (Chateau Frontenac). Exec. Dir., George S. Mooney, Mount Royal Hotel, Montreal, Quebec, Canada.

June 9-11—Glenwood Springs, Colo.
COLORADO MUNICIPAL LEAGUE. Annual Convention (Hotel Colorado). Exec. Sec., D. Mack Easton, 327 Norlin Library, Boulder, Colo.

June 9-11—Hibbing, Minn.
LEAGUE OF MINNESOTA MUNICIPALITIES. Annual Convention (Hotel Androy). Exec. Sec., C. C. Ludwig, 15 University of Minnesota Library, Minneapolis 14, Minn.

June 10—Paris, France
ASSOCIATION DES CITES JARDINS DE FRANCE and ASSOCIATION INTERNATIONALE DES CITES-LINEAIRES JARDINS. Annual Meeting. Dir., Georges Benoit-Levy, 11 rue Malebranche, Paris 5, France.

June 12-14—Wilkes-Barre, Pa.
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Meeting (Hotel Redington). Sec.-Treas. H. A. Fritschman 2325 Darby Road, Havertown, Pa.

June 12-17—Cleveland, Ohio
ANNUAL CONFERENCE OF SOCIAL WORK. Annual Meeting (Cleveland Auditorium). Exec. Sec., Joe R. Hoffer, 82 North High St., Columbus, Ohio.

June 13-15—Syracuse, N. Y.
NEW YORK STATE CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Hotel Syracuse). Exec. Sec., Morgan Strong, 6 Elk St., Albany, N. Y.

June 13-17—Edinburgh, Scotland
THE INSTITUTE OF PUBLIC CLEANSING. Annual Conference. Sec., K. Wyndham Brown, 8, Orange St., London, W.C. 2, England.

***June 13-17—State College, Pa.**
SECOND ANNUAL PENNSYLVANIA SEWAGE WORKS SCHOOL. Co-Chairmen, Robert E. Stiemke, Professor of Sanitary Engineering, and R. Rupert Kountz, Assistant Professor Sanitary Engineering, State College, Pa.

June 17-18—Chicago, Ill.
CENTRAL STATES SEWAGE WORKS ASSOCIATION. Annual Meeting (Hotel Sherman). Sec.-Treas., Paul W. Reed, 1098 W. Michigan St., Indianapolis 7, Ind.

***June 22-24—Cleveland, Ohio**
OHIO SEWAGE AND INDUSTRIAL WASTE TREATMENT CONFERENCE. Annual Meeting (Hotel Carter). Sec.-Treas., G. A. Hall, 301 Ohio Departments Bldg., Columbus 15, Ohio.

June 22-25—Lake Tahoe, Calif.
NATIONAL ASSOCIATION OF TAX ADMINISTRATORS. Annual Convention (Tahoe Tavern). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago 37, Ill.

June 23—Wanaque, N. J.
AMERICAN WATER WORKS ASSOCIATION—New Jersey Section. Outing and Inspection. Exec. Sec., C. B. Tygert, P. O. Box 178, Newark 1, N. J.

***June 24-26—Biloxi, Miss.**
MISSISSIPPI MUNICIPAL ASSOCIATION. Annual Convention (Hotel Buena Vista). Mgr., George Lemon Sugg, Box 531, Jackson, Miss.

June 29-July 1—Harbor Springs, Mich.
MICHIGAN ASSOCIATION OF CHIEFS OF POLICE. Annual Convention (Hotel Ramona Park). Exec. Sec., E. B. Wilson, Detroit Leland Hotel, Detroit 26, Mich.

***June 29-July 1—Baton Rouge, La.**
TWELFTH ANNUAL SHORT COURSE FOR WATER AND SEWERAGE WORKS PERSONNEL (Louisiana State University). Dir., John H. O'Neill, Division of Public Health Engineering, Department of Health, Civil Courts Bldg., New Orleans 7, La.

July 17-20—Oakland, Calif.
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Convention. Exec. Dir., Keith L. Seegmiller, 1616 I St. NW., Washington 6, D. C.

July 26-28—Niagara Falls, N. Y.
NEW YORK STATE ASSOCIATION OF CHIEFS OF POLICE. Annual Meeting (Hotel Niagara). Exec. Sec., R. W. Morris, Room 204 State Tower Bldg., Syracuse, N. Y.

Aug. 22-26—Baltimore, Md.
NATIONAL SHADE TREE CONFERENCE. Annual Meeting (Hotel Lord Baltimore). Sec.-Treas., L. C. Chadwick, Department of Horticulture, Ohio State University, Columbus, Ohio.

***Sept. 7-9—Bedford, Pa.**
GOVERNMENTAL RESEARCH ASSOCIATION. Annual Conference (Hotel Bedford Springs). Sec., Louis D. Brown, 30 Rockefeller Plaza, N. Y. 20, N. Y.

Sept. 8-9—Minneapolis, Minn.
AMERICAN WATER WORKS ASSOCIATION—Minnesota Section. Annual Conference (Hotel Nicollet). Sec.-Treas., R. M. Finch, 318 Metropolitan Life Bldg., Minneapolis 1, Minn.

***Sept. 12-16—New Orleans, La.**
NATIONAL RECREATION ASSOCIATION. Annual Congress (Municipal Auditorium). Sec., T. E. Rivers, 315 Fourth Ave., New York 10, N. Y.

Sept. 13-16—Dixville Notch, N. H.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Hotel Balsams.) Sec., Joseph C. Knox, 204 Tremont Bldg., Boston 8, Mass.

Sept. 19-22—Boston, Mass.
NATIONAL TAX ASSOCIATION. Annual Conference (Hotel Statler). Sec., Ronald B. Welch, P. O. Box 1799, Sacramento 8, Calif.

***Sept. 19-23—French Lick, Ind.**
ILLUMINATING ENGINEERING SOCIETY. Annual Convention (Hotel French Lick Springs). Exec. Sec., A. D. Hinckley, 51 Madison Ave., New York, N. Y.

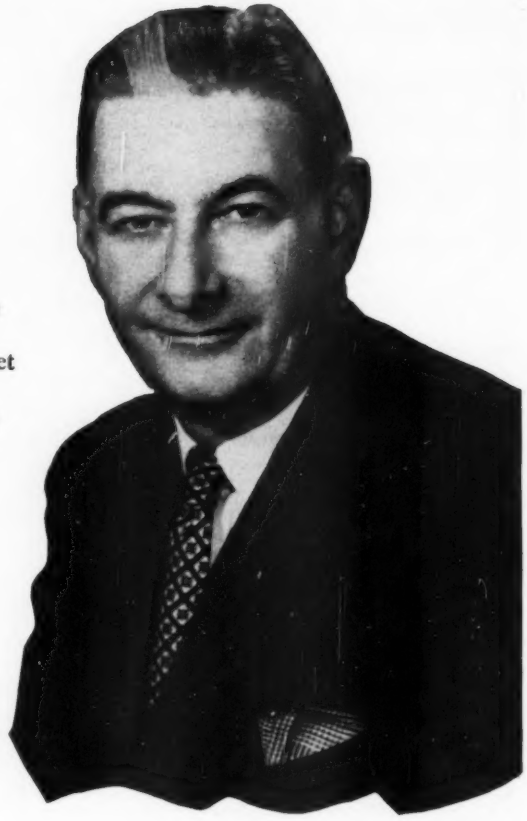
Sept. 20-22—Des Moines, Iowa
IOWA SEWAGE WORKS ASSOCIATION. Annual Meeting (Hotel Kirkwood). Sec.-Treas., Leo Holtkamp, P. O. Box 310, Webster City, Iowa.

***Sept. 20-23—Detroit, Mich.**
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Convention (Hotel Book Cadillac). Exec. Sec., Frank L. Brunckhurst, 30 North LaSalle St., Room 831, Chicago, Ill.

Sept. 21-23—Atlanta, Ga.
GEORGIA WATER AND SEWAGE WORKS ASSOCIATION. Annual Water and Sewage School (Georgia Institute of Technology). Sec.-Treas., Leonard B. Waller, R.F.D. No. 12, Box 246, Atlanta, Ga.

"Planned Street Lighting programs APPEAL to communities"...

Says Mayor **Charles E. Slusser,**
Akron, Ohio



"COLD, hard statistics, compiled over the years, bear out the fact that good street lighting is the specific answer to the problem of reducing traffic accidents and crime, ofttimes as much as 40%," says Mayor Charles E. Slusser of Akron, Ohio.

"Convincing proof of the value of a Planned Street Lighting Program is the number of local municipalities that have applied such a program," continues Mayor Slusser, "and wherever Modern Street Lighting goes up, civic pride invariably takes on new stature. It marks any city as a good place to live."

FOR MORE FACTS
Write for your free copy of "A Planned Program for Better Street Lighting."

The Street and Traffic Safety Lighting Bureau, 155 East 44th St., New York 17, N. Y.

The Municipal Bond Market

THE volume of long-term borrowing by states and municipalities was sharply lower in the first quarter of 1949 than in the first quarter of 1948—$572,000,000 compared with $993,000,000, according to *The Bond Buyer*. This $421,000,000 decline, however, did not reflect any diminution of local borrowing, but was due to curtailment of state borrowing for veterans' bonuses. In the first quarter of 1948, three states—Illinois, New York, and Ohio—issued a total of $585,000,000 bonus bonds, while in the first quarter of 1949 the only important financing of this type was a $50,000,000 issue by Louisiana. There were over 1,000 new bond issues in this 1949 period, but the only ones in excess of $10,000,000, other than that of Louisiana, were $44,200,000 by Philadelphia, $21,500,000 by the Los Angeles School Districts, $15,000,000 by the Chicago Sanitary District and $12,350,000 by San Francisco, all general obligations, and $15,000,000 New Orleans Union Passenger Terminal revenue bonds.

New borrowings in April, not yet tabulated, probably at least kept pace with the $167,000,000 in April 1948, as it includ d two large issues—$48,375,000 New York City Housing Authority (city-guaranteed) bonds and $40,000,000 Los Angeles Department of Water and Power revenue bonds.

Among the smaller new bond issues in April that were of special interest for various reasons were $2,000,000 water and electric bonds of Eugene, Ore., and $3,000,000 sewage and garbage disposal system bonds of Lansing, Mich. Eugene succeeded in selling its bonds, due serially in 1950-59, at the low interest cost of 1.398%. The very favorable rate may be attributed largely to the fact that the bonds, in addition to being full faith and credit obligations of the city, are secured additionally by a pledge of the net revenues of the city's water and electric systems, which have been administered with outstanding success by an autonomous, non-political board.

The Lansing bond issue is distinguished by the fact that it constitutes the community's only net, public debt. Since 1944, the city has had its small remaining debt covered by an invested reserve fund. Overlapping Ingham County has no bonds outstanding, and the school district, as the result of its initiation of a pay-as-you-go policy over 40 year ago, has had no debt for many years.. While the new city bonds are general obligations, the city does not expect to levy taxes for them as it is imposing for debt service a service charge equal to 50% of water bills.

The conspicuous feature of municipal bond interest rates in recent weeks has been their stability. *The Bond Buyer's* yield index of twenty 20-year bonds, after rising from the low of 2.15% reached January 20, 1949, to 2.21% on March 4, has shown a slight downward trend, reflecting an undercurrent of market strength. The index was at 2.18% on March 10 and by April 18 was at 2.14%—a shade below the low point achieved in January.

FREDERICK L. BIRD
Director of Municipal Research
Dun and Bradstreet, Inc.

Recent City Manager Appointments

JOHN A. BAILEY has succeeded H. F. BURKHOLDER at Edgeworth (Sewickley), Pa.

L. V. BEAN, city manager of Waycross, Ga., 1928-34; 1940-41; 1945-49; Paducah, Ky., 1934-40, received the appointment at Decatur, Ga.

HARRY A. DILLON, Chief Field Engineer, Limestone Air Base, received the appointment at Mount Desert (Northeast Harbor), Maine.

WILLIAM EVANS has succeeded ROBERT L. COOPER at Clovis, N. M.

ROBERT S. MARSHALL, JR., Executive Director of the Alexandria Redevelopment and Housing Authority, has succeeded Nicholas Colasanto at Alexandria, Va.

ALLEN M. RANDOLPH, city manager of Toccoa, Ga., 1947-49, will be the first manager of Homewood, Ala.

LOTT T. ROGERS, city manager of Lancaster, S. C., 1947 to date, received the appointment at Camden, S. C.

JOHN J. SAILORS, chief administrative officer since 1945, became city manager on February 28 of Newport Beach, Calif.

DONALD C. WAGNER, manager of West Reading, Pa., 1927-38; Ephrata, Pa., 1938-42; Long Beach, N. Y., 1946-47; Portsmouth, Ohio, 1947-48, received the appointment at Yonkers, N. Y.

EARL A. WHITE, manager of Belfast, Maine, 1948-49, received the appointment at Boothby Harbor, Me.

GEORGE F. WILSON succeeded ROBERT A. SLONE as village manager at Flushing, Mich.

ROYCE WOODMAN is the first manager for Chelsea, Maine.

J. MERTON WYMAN, manager of Rumford, Maine, 1941-49, has succeeded EARL A. WHITE at Belfast.

CLARENCE E. RIDLEY
Director
International City Managers' Association

Sol Pincus to Head International Health Unit

SOL PINCUS, American consulting engineer, has closed his office in New York and has left for Geneva, Switzerland, where he will set up a Section on Environmental Sanitation for the World Health Organization. The first World Health Assembly, which met in Geneva last summer, made environmental sanitation one of its six top priority programs for 1949.

Mr. Pincus has an impressive record in public-health work. In 1916 he joined the United States Public Health Service as a civil engineer and during World War I he served as a captain, working on the maintenance of public-health sanitary activities in various military stations. Returning to the United States Public Health Service after the war, he organized engineering districts throughout the country for aiding states in developing sanitary-engineering divisions.

In 1923 he left the United States Public Health Service to enter private practice as a consultant on public-health projects, making such important contributions as his two-year survey of health and hospital conditions in Philadelphia.

In 1935 he was appointed Deputy Commissioner in the New York City Department of Health and directed sanitary-engineering and food-control activities in that department until 1947, when he again returned to private practice.

Mr. Pincus is a member of the Board of Consultants on Sanitation and Food Problems of the United States Public Health Service; a Fellow of the American Public Health Association; a Fellow of the American Association for the Advancement of Science; a member of the American Society of Civil Engineers; a member of the Federation of Sewage Works Associations and of the American Water Works Association.

Municipal Purchasing News

MILWAUKEE'S municipal purchasing department will spend $215,000 this year for a municipal storehouse. The Purchasing Department's 1948 business was the biggest on record, $6,127,515 worth of equipment and supplies. Here's a small percentage of the items purchased in 1948, picked at random from the commodity lists: cedar poles for tree stakes, $6,104; Fourth of July fireworks, $10,158; activated carbon for the filtration plant, $7,494; electric cable, $80,273; trucks, $72,970; arsenate of lead for tree spraying, $8,300; steps for the sides of manholes, $2,880; lawn mowers, $3,829. The city also bought 922 rope mops, 102 floor squeegees, 2,000 street brooms.

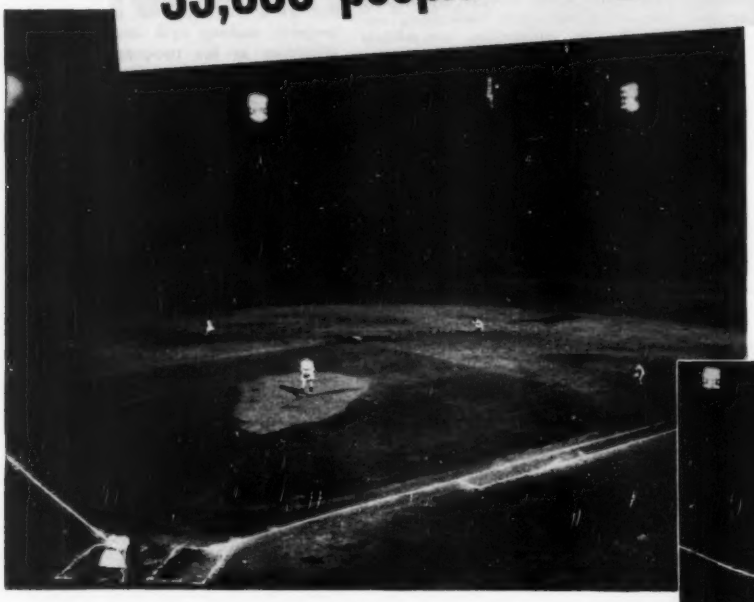
It is reported in Detroit that truck output has been ahead of demand for some time except on light models. It is generally believed that the total number of trucks in the hands of dealers is at or near a record high.

After a long absence, the buyers' market has returned in practically all fields. It is heralded by the large number of vendors who now are actively seeking governmental business at all levels. NIGP members report from coast to coast that responses to bid invitations are now equaling or exceeding the volume of such response as recorded prior to the war year.

In Cleveland recently, the Iron Fireman Manufacturing Company gave miniature picks and shovels to 800 distributors to wear on their lapels during a recent convention. The idea—"You have to dig for sales."

ALBERT H. HALL, *Executive Director*
National Institute of Governmental Purchasing, Inc.
Washington, D. C.

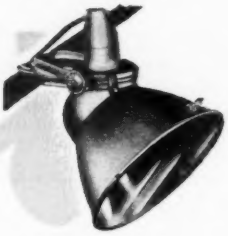
Kenosha, Wisconsin—
55,000 people—5 lighted parks



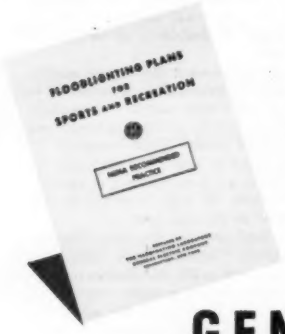
To give an idea of the lighting at Simmons Field, this photograph was taken at F5.6, 1/5th second, on Super XX film.

This is Simmons Field in Kenosha—one of Wisconsin's stand-out ball parks and one of *five* lighted recreational areas in this city of 55,000 population. Together these lighted parks have drawn as many as 20,000 people in one evening—have been instrumental in cutting juvenile delinquency and have greatly reduced vandalism in the city parks.

Simmons Field itself—named after Simmons Company who donated the land—seats 2600 and has averaged 1500 admissions per night. Our part of course was the lighting. Simmons Field uses a standard G-E "160" lighting system—planned, ordered, and installed according to "the book."



THE SPORTS LIGHT—This is the floodlight used at Simmons Field, the G.E. L-69. It gives more light per unit, more light per watt, is easier to install and cheaper to maintain than any other comparable unit. It's so good that four major-league parks use it, so economical that it's the favorite for sand-lot softball. Bulletin GEA-4835 gives complete description and prices.



YOURS FOR THE ASKING—This is "the book" that contains 38 complete floodlighting plans for sports and recreation. One is the "160" lighting system used at Simmons Field—160 G-E floodlights on 10 80-foot steel poles—complete with a list of all material required down to concrete and paint. Among other plans are tennis courts, volley ball and 12- to 48-lamp softball fields. *Address Apparatus Dept., General Electric Co., Schenectady 5, N. Y. and ask for GET-1284.*

GENERAL ELECTRIC

The Best in Street Lighting Is None Too Good for Oglesby, Ill.

By EDWARD HAND
City Clerk
Oglesby, Ill.

On this 3/5 mile of 27-foot concrete pavement, Oglesby, Ill., has installed fourteen 400-watt mercury-vapor street lights. The General Electric luminaires are approximately 250 feet apart, staggered except at a five-track grade crossing, where three of the lights are concentrated in a distance of 200 feet. Light centers are 27 feet from the pavement on 8-foot curved upsweep arms.

OGLESBY, ILL., (cement, electrical apparatus, blouses, wood cabinets) has 4,000 people, no municipal debt, owns its electric and water-distribution systems, and has modern and far-above-average street lighting. There are two primary reasons for good street lighting in Oglesby.

1. Money realized from the distribution and sale of electricity has permitted the city's electric department to try out the ideas and improvements of the illuminating engineers.

2. We are a young city (established 1902) and can afford to experiment. Oglesby never levied a special assessment for street lighting. No older citizens can thus kick up a fuss over today's citizens' receiving at no direct cost what they had to pay for on a front-foot basis. Oglesby has had younger citizens directing its destinies for many years.

All of the street lighting in Oglesby —mercury, sodium and incandescent— is of General Electric manufacture. George W. Colman, of the Chicago office, a district lighting specialist, has always been most helpful to us.

Property owners not only do not pay a special levy for street lighting, but there has been no splitting of costs with the State of Illinois in the installation of the 35 sodium-vapor luminaires on U. S. 51. The state maintains the highway but the lighting and its servicing and energizing are done by the city.

The newest installation, mercury vapor, lights up a curious assortment of property along its 3/5 of a mile. There are about a dozen residences, a busy industrial switch crossing, a city-owned forest preserve comprising 65 acres of virgin timber, and hundreds of front feet of vacant industrial property. Traffic is inclined to hit the ball on this street, which is a part of a state-aid (county) system, and we had a record of several minor accidents at this grade crossing involving motorists and motorcyclists versus switch trains, which did not come off second-best.

The citizens take good lighting for granted just as they take debt-free local government, its cash-basis administrations and its lowest-in-the-county tax rate. Incandescents, whether 10,000-lumen in the business district or 2,500-lumen in a residential neighborhood, are just good lighting. And there are still some who don't like the way they look under sodium-vapor lighting and the sobering effect it has on lipstick. But mercury vapor? To a man and boy they are for it! They think it is the greatest light source since the sun was hung up in the sky.

We hope to add mercury-vapor luminaires at some few remaining rail crossings that are lighted by incandescents. If all continues to go well, when better lighting is available anywhere, Oglesby will be quite likely to have some of it.

Brighter Bloomsburg, Pa.

THE newly issued 1948 report of the Town of Bloomsburg, Pa., population 9,799, reveals that the Pennsylvania Power and Light Company completed three new sections of street lights for the town during 1948. During the fall, forty one 4,000-lumen lamps and new poles were installed on East Street and on Berwick Road. At the same time 24 lamps and poles were installed on West Main Street. At the very end of the year the West Main Street project was extended by installing fifteen 4,000-lumen lamps. All lights are modern and replace old-type lamps.

Wooden poles were used instead of metal for three reasons. First, all of the new installations were on streets where there were trees, and among these it is thought wooden poles make a better appearance. Second, the poles had to serve not only as support for the light fixtures but also for light lines. Third, a 4,000-lumen light on a wooden pole costs $47.40 per year, while the same light on a metal pole would cost the town $63.60 a year.

The town has a ten-year contract with the Pennsylvania Power and Light Company to furnish the entire street-lighting service. A fixed sum is paid per year for each light in operation. This figure is the only charge made and includes the cost of the fixtures and the electricity used. The charge per light is dependent on the number of lights of that type and size in operation, the size of the bulb, the type of pole, and other minor factors. On January 1, 1949, there were 473 lights in operation.

L-M's new Spherolite, Jr.

for better neighborhood lighting at an economical neighborhood price!

The new Spherolite Jr. offers the many advantages of an enclosed luminaire, with shielded light source and good directional characteristics. Its low original and operating costs make it most suitable for residential areas with narrow streets and wide spacings.

Some Important Features

Narrow beam for increased lighting of streets and shielding of residences.

Concentration of light in the main zone, with maximum intensity of eight times the bare lamp value. Main beam at 78° in vertical provides high visibility at wide spacings.

Choice of IES type II or 4-Way light distribution, as shown at left. Refractors easily attached to the specular Alzak reflector with the L-M stainless steel V-Band, which is a positive gasketless seal against bugs, dust, and water. Thus refractors are easily changed in the field, adding flexibility and reducing inventory required for maintenance.

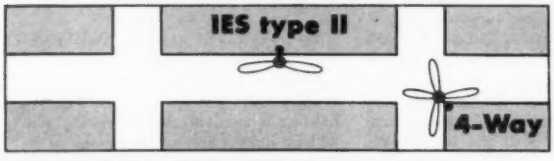
Interchangeability to meet traffic or population growth

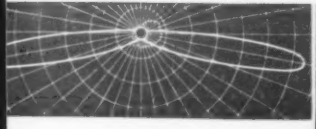
Spherolite Jr. fits the same wide variety of L-M-standardized heads as do L-M's smallest open reflectors and largest enclosed luminaires. Thus changing luminaires usually means simply unlatching one and latching on the replacement—offering a substantial saving in time and material.

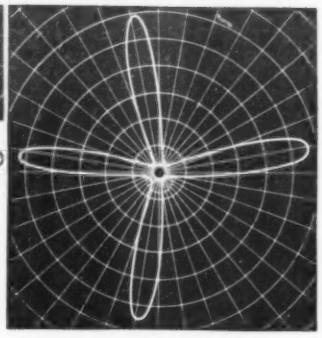
The reflector-refractor assembly illustrated fits any of these: low voltage multiple head; high voltage porcelain head; and, with modified reflector collar, metal series heads up to 5000 volts. The type B head shown is available for either inner or outer wiring, and in either pendent or side mounted style.

Get complete information on Spherolite Jr. and other equipment and L-M Street Lighting Engineering Service ***from the L-M Field Engineer; or write*** Line Material Co., Milwaukee 1, Wis.

Two types of light distribution







Choice of two Holophane® refractors which provide either the IES type II pattern shown above, or the 4-Way pattern for intersections at right.

7132

LINE MATERIAL Street Lighting

Complete Coordinated Equipment for All Distribution Requirements

Brilliantly Lighted Western Runway

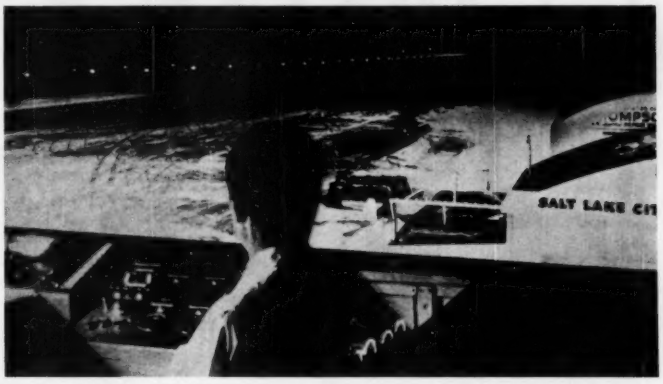
SALT LAKE CITY didn't like to have its atmosphere referred to in aviation circles as "Flying the Ditch." Result: Salt Lake City Municipal Airport No. 1. The 6,830-foot instrument runway, with Line Material-Bartow high-intensity lights and an instrument-landing system, about fills the bill for pilots. The entire renovation cost $287,197, paid for by Salt Lake City Corporation, the State of Utah, and the Federal CAA.

The use of high-intensity lighting is comparatively new to commercial aviation. These units installed at Salt Lake City are known as the L-M "Bartow Controllable Beam High Intensity Light" and were invented by Jack Bartow, a World War I pilot. The unit consists of a steel shell upon which are mounted two half-sphere lenses, an inner fresnel and outer refractor. Within this shell and lens assembly is mounted a socket on wheels, which runs forward and backward on a track. This forward and backward movement is accomplished by a synchronous inductor-type motor which drives a worm gear, to which the socket is attached.

A 500-watt projection-type lamp in the units produces two identical 180,000-beamed-candlepower rays, one in each direction longitudinal to the center line of the runway. The movement of the lamps forward or backward within the lenses causes the beams to move toward or away from the center line of the runway, enabling the tower operator to use different horizontal toe-in settings for different visibility conditions. The less the visibility, the more toe-in is necessary in order to get maximum penetration without glare.

Some other cities using the "L-M Bartow System" are Worcester and Boston, Mass.; Raleigh, N. C.; Phoenix, Ariz., and Knoxville, Tenn.

L-M Bartow high-intensity runway unit.



Salt Lake City's lighted instrument runway seen from the control tower.

Fluorescent Lights On Salem Bridge

PHOTO COURTESY SYLVANIA ELECTRIC PRODUCTS, INC.

Row of eight-foot slimline fluorescent lamps 5 feet above the roadway on a fence rail at one side of the Kernwood Bridge between Salem & Beverly, Mass.

AN experimental fluorescent-lighting installation on a 500-foot section of the Kernwood Bridge, between Salem and Beverly, Mass., indicates that excellent visibility is attained when continuous, low-brightness fluorescent lamps are used, says O. H. Briggs, of Sylvania Electric Products, Inc.

The installation consists of a row of 8-foot slimline fluorescent lamps mounted 5 feet above the 32-foot roadway on a fence rail along one side of the bridge. A louvre on the fixture shields the lamp from the eyes of the motorist, so that he may drive along the bridge without discomfort from glare.

Sodium Vapor Reduces Accidents At Traffic Circle

FLASHING amber signals were not proving effective as a warning of the sudden change in direction of U. S. Route 9-W at the entrance to the rotary intersection with U. S. Route 44 at Highland, N. Y.

Annual traffic counts revealed that between the hours of 7 a.m. and 7 p.m. on a normal Saturday in August, the following number of vehicles entered the rotary: 6,000 in 1944, 7,000 in 1945, and 10,000 in 1946.

There were two flashing amber signals mounted on 8-foot high concrete pedestals to warn northbound and southbound traffic of the one-way movement. The signals were located in the nose of the directional islands. There were four property-damage accidents and four personal-injury accidents in which eight persons were injured during the two-year period prior to September 1946. Five of these eight accidents occurred during hours of darkness.

Each of the eight accidents involved

JOSLYN STREET LIGHTING

Luminaires, brackets and steel standards all engineered for

HIGH OPERATING EFFICIENCY, DURABILITY and ATTRACTIVE APPEARANCE

now available on

QUICK DELIVERY

The 25′ pole with 6′ bracket and base having 3" x 5" hand hole, as illustrated, is now carried in stock in our Chicago plant . . . Many other designs are available for various mounting heights, bracket lengths, and with provision for mounting transformer in base or with fittings for overhead wiring . . . The wall thickness of our poles at the base is over ¼", giving that added assurance of strength and long life . . . Complete information on request.

Branch offices in principal cities

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Complete Pole Line Equipment

30 NORTH WACKER DRIVE, CHICAGO 6, ILL.

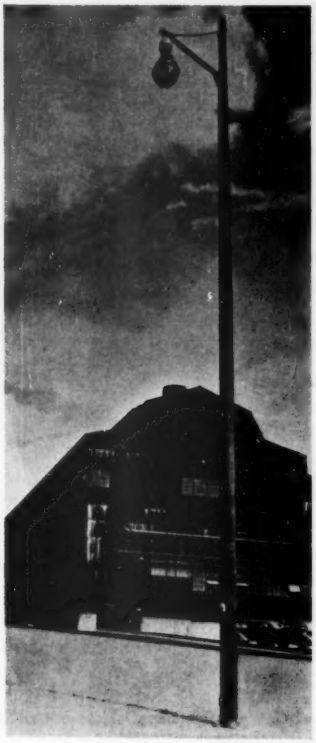
only one vehicle. Three accidents resulted from vehicles striking the signal pedestals and the other accidents resulted from vehicles running into the island or off the roadway. This evidence of confusion resulted in the removal of the pedestal signals and illumination of the rotary.

Seven 10,000-lumen sodium-vapor luminaires, overhanging the roadway at a height of 26 feet, were installed in September 1946.

The volume of vehicles passing through the intersection rose rapidly during the two-year period following the installation of the luminaires, with 12,500 vehicles observed in the 1947 count and 14,000 in the 1948 count.

There was a 75% reduction in accidents in the subsequent two-year period, with only one property-damage accident and one personal-injury accident reported. The number of persons injured was reduced over 87%; only one person was injured after the improvement. The replacement of the pedestal signals with sodium-vapor lighting units cost approximately $2,500. Maintenance costs have been increased by approximately $30 annually. This statement was contributed by R. C. Georger, Director of the State Traffic Commission of the State of New York, to the Accident Prevention Department of the Association of Casualty & Surety Companies of New York, N. Y.

They Bring Light to the Maintenance Man



PHOTOS COURTESY THE THOMPSON ELECTRIC CO., CLEVELAND, OHIO

Hanger-equipped street light on Union Metal pole in an industrial district.

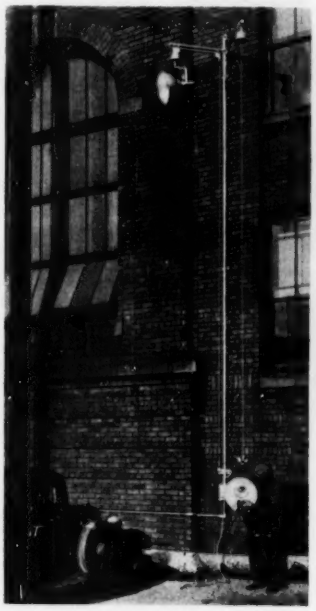
IN MANY smaller communities the street lamps are serviced from the ground instead of from tower or ladder trucks. One-man ground-level servicing is accomplished by the use of Thompson Disconnecting and Lowering Hangers designed especially for outdoor-lighting installations.

The operation is simple. The lock box on the pole is opened, and the detachable handline is attached to the terminal link of the operating chain or cable. A regulated pull and release unlatches the hanger, which also automatically disconnects it. The fixture is lowered dead for cleaning, re-lamping and repairs. After servicing the fixture is pulled up, slowly just before seating while it rotates into position. A regulated pull and slow release latches and reconnects the lower member. The handline is disconnected, the terminal link is restored to its position, and the lock box is closed.

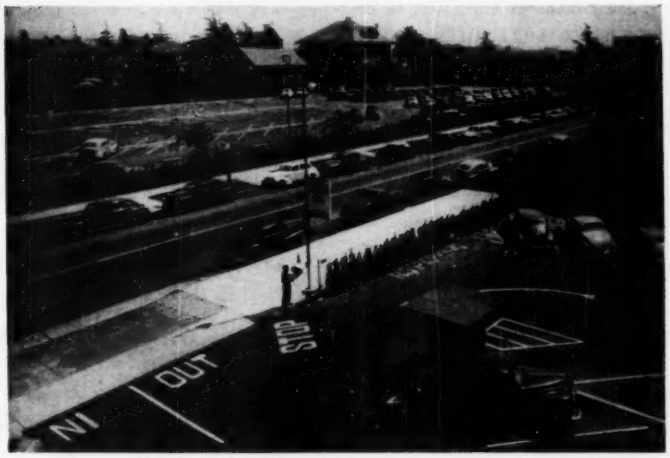
The design of the hanger is such that with directive ray equipment, either street or floodlighting luminaires may be lowered, cleaned, re-lamped, and returned to position without changing the focus.

The disconnecting hangers are suitable only for multiple circuits or for series circuits using L transformers, the usual practice with lamps of 4,000 lumens or larger.

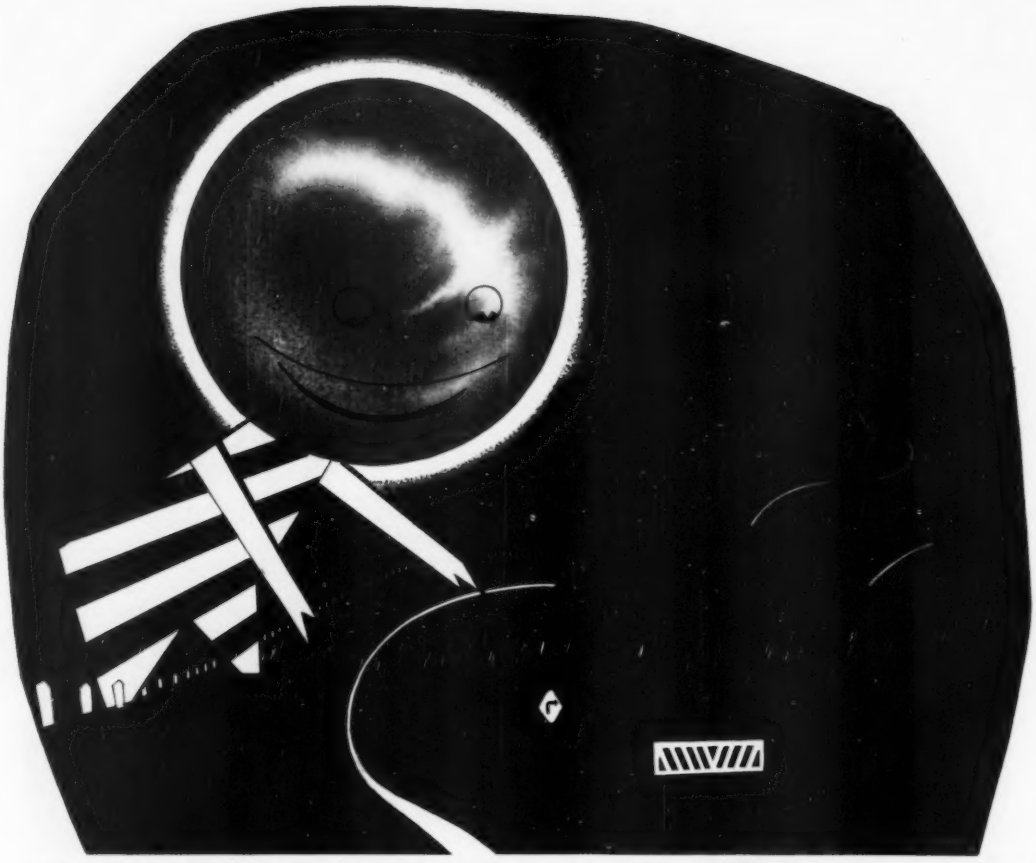
Thompson Hangers are also used extensively for parking lots and for plant protective lighting around municipal properties, parks, and public buildings.



Servicing a floodlight outside the Cleveland municipal generating station



Down-to-earth servicing of floodlights at a Los Angeles parking lot.



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Joe Prismo points the way to better highway markings with the PRISMO LIFE-LINE. Joe Prismo points the way to better reflective coatings for signs with the PRISMO SIGN KIT.

Both processes, developed by the Prismo Laboratories, give you the utmost in reflective coatings at the lowest cost. Through never-ceasing research in the field and in the lab, Prismo gives you longer lasting reflectorization.

Prismo lasts longer on the highways because the special plastic, Prismo Binder holds the PRISMO SPHERES in a vise-like grip. And the Prismo Spheres reflect more light because they're rounder, clearer, more perfect in every way.

Prismo Engineering and pioneer experience with reflective coatings assures you of the newest and finest in dispensing equipment. No matter what your reflectorization problem may be, PRISMO KNOW HOW will help you solve it.

Write today, for fully informative bulletins on the many uses of Prismo, the sphere of safety.

THE LONGEST LASTING CENTER LINE ON ANY HIGHWAY IS THE PRISMO LIFE-LINE

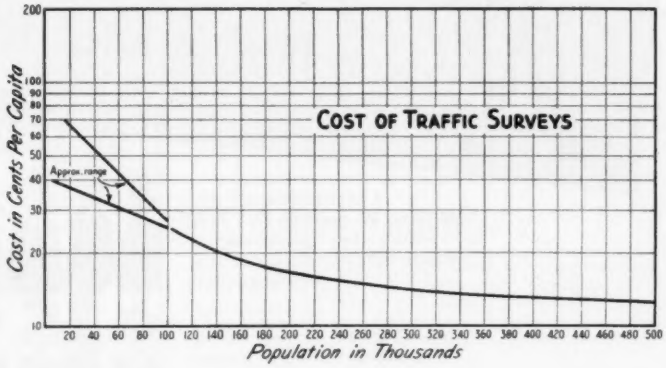
PRISMO SAFETY CORPORATION • HUNTINGDON, PA.

Traffic Control and Facilitation

Cost of Traffic Surveys

By GREGORY M. DEXTER
Consulting Engineer
Empire State Bldg.
New York 1, N. Y.

A RECENT tabulation of data from half-a-dozen sources on the cost of about 15 traffic surveys resulted in the generalized semi-logarithmic chart shown here. The approximate range below 100,000 population is indicated. Above 100,000, only four cost figures were available. Like a great deal of engineering-report work, the cost is dependent as much upon how large a sum the municipality is willing to spend for professional guidance as it is upon the thoroughness and quality of the guidance furnished.



A thorough traffic survey might be described as including collection of field data on vehicular volumes and turning movements as well as pedestrian volumes at important intersections; location of traffic signals, their type and their timing; special provisions for the fire and police departments and ambulances; size, type, and location of traffic signs; parking facilities on and off the street and the regulation thereof; zoning ordinances as affecting parking lots; taxicab stands at railroad stations, hotels, and elsewhere; truck loading and unloading in business districts; bus routes and stops; routing of through traffic to avoid congested and residential districts; conflicts with electrically operated trolleys; railroad trains on business streets; separation of trucking from private automobile traffic; left, right, and "U" turns; speed limits for various kinds of traffic; locations with bad accident records and an analysis of the causes thereof; effect of street lighting and pavement conditions; one-way streets; obscured intersections; marking of lanes and parking spaces; interaction of municipal, state, and federal traffic control; the need for special traffic facilities such as tunnels, bridges, or parkways; handling of traffic at schools, churches, theaters, and important gatherings; traffic administration, ordinances, and court procedure in their effect on traffic violations, and maps, exhibits, and conclusions.

The cost of any extraordinary number of copies of the final report is not included in the chart. Sometimes a municipality requires a large number of printed copies instead of the usual half-dozen-or-so typewritten copies a consultant ordinarily furnishes.

The design and layout of special facilities such as tunnels, bridges, and parkways obviously are not included in the costs shown. The extent of the field data collected and of the analysis will have an important effect on the costs. The costs indicated on the chart are those that the consultant might expect without any allowance for overhead and profit. They include every item that can be charged directly, even stenographers' salaries, telephone costs, and similar small items. They assume that field data in the main will be collected by temporary employees hired in the municipality where the survey is made.

Traffic surveys are made at costs below those indicated but they can be only preliminary in quality of coverage.

In the final analysis, the municipality can get a traffic survey for almost any amount it is willing to spend within a broad range. Actually, the municipality should buy a traffic survey on a per-diem basis with a maximum total fee and should depend on the integrity of the consulting engineer for getting value received within the limits set.

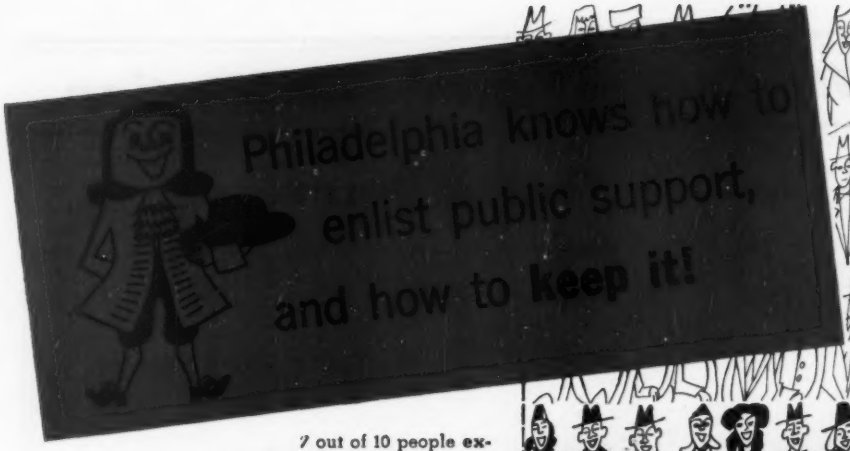
Traffic-Signal Flexibility

By W. E. SCHWANHAUSER
General Electric Company
West Lynn 3, Mass.

IN SPEAKING of obsolete traffic-signal systems, one generally has reference to the lack of flexibility in signal timing and the inadequate visibility of signals. A modern traffic-signal system provides for the changing of traffic-signal timing to meet the changes in traffic flow. A modern traffic-signal system also provides adequate signalization that is readily visible to those whom it is meant to control. In some localities pedestrian signalization, in addition to vehicular control, has proven most advantageous in expediting the movement of vehicular traffic as well as providing greater safety for the pedestrians.

In recent issues of THE AMERICAN CITY, the matter of modern traffic signals and signal placement has been covered with appropriate comments from a number of diverse sources and need not be elaborated upon. However, the matter of flexible signal timing covers a number of different aspects, all of which are designed to assist in keeping traffic fluid and expediting its movement.

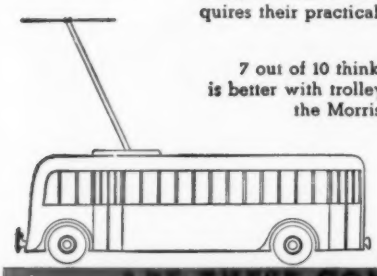
In a city the flow of vehicular traffic will vary from time to time, depending on local conditions. Generally, there is a peak movement just before and after business hours, when people are traveling from home to work and when they start for home. Between times, traffic is heavy, but nothing like the rush hours. After supper until about midnight there is often a considerable evening traffic while people seek relaxation away from home. From midnight until, roughly, 6 a.m. the volume

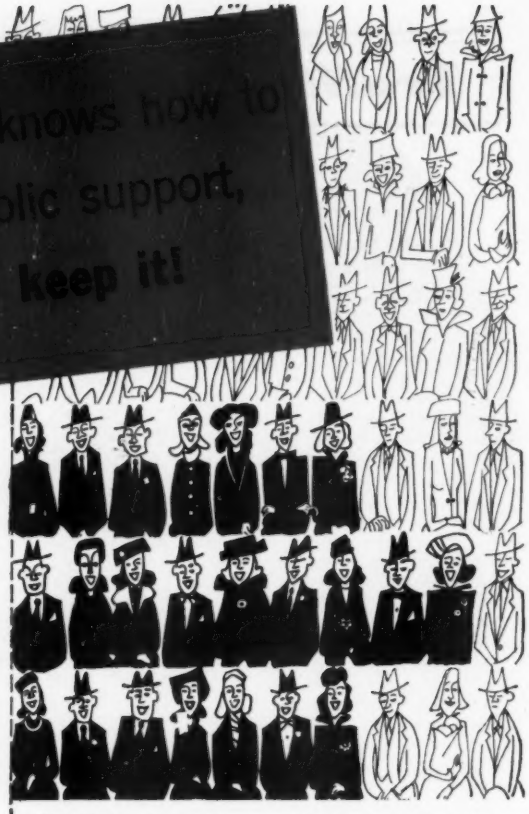


7 out of 10 people **expressing an opinion** in a city-wide survey* prefer electric transit vehicles—PCC cars and trolley coaches.

9 out of 10 **like** the new trolley coaches on the Morris-Tasker line† . . . where heavy traffic requires their practical application.

7 out of 10 think the **service** is better with trolley coaches on the Morris-Tasker line.





*1945, Opinion Research Corp. †1947, National Analysts, Inc.

ARE THESE CONDITIONS TRUE IN YOUR CITY?

"This traffic problem has to be solved!"

"And without spending millions for freeways and superhighways."

"All those cars and no customers! This neighborhood is blighted!"

PERHAPS YOUR CITY IS ONE OF THE HUNDREDS SUFFERING FROM TRAFFIC CONGESTION AND BLIGHT CONDITIONS. ELECTRICS ATTRACT MORE RIDERS AND COST LEAST TO OPERATE. PLEASE WRITE US. WE ARE ANXIOUS TO HELP. Apparatus Department, General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

is light. Yet statistics vividly point out the great number of accidents that occur during these hours, indicating that some form of traffic control is needed. To provide it, a traffic-signal system must be flexible.

Cycle Change

Since too many of our present-day traffic-signal systems have no provision for accommodating these changes in traffic flow, they are declared obsolete and in need of modernization. This means that the system must be provided with features for automatically changing the timing of the signal-color intervals as well as the time relationship between signal indications at successive intersections.

Very often changes in traffic density will occur on the main streets only, and not on the cross streets, or at least the increase will not be proportional on both the main and the cross streets. With a change in the proportion of traffic flow there is a need for changing the timing of the green intervals—a different-percentage cycle split. In other words, the signal cycle must be divided up in a different manner, giving more time to the "main-street green," and leaving the "cross-street green" essentially the same. *Modern multi-dial controllers provide such flexibility, furnishing both a change in cycle length as well as percentage split.*

A change in offset timing is very often desirable, especially for those cities built on the hub principle, or those with radial feeder thoroughfares where the directional flow of traffic is primarily unidirectional during the peak rush hours.

In some instances the distance between signalized intersections is such that a reasonable speed of progression can be obtained in opposite directions simultaneously, but more often than not, this ideal condition does not exist. Consequently, in the interest of expediting the movement of traffic, it proves desirable to change the offset timing between intersections at different times of the day so as to increase the number of vehicles that can progress through a series of intersections without having to halt for a red light.

Triple Reset

For instance, think of a radial feeder thoroughfare where the heavy rush of traffic is inbound from the suburbs to the central business district during the early morning hours and just reversed during evening rush hours. In between rush hours the flow of traffic is essentially equal in opposite directions. Such a street is ideally suited for the feature known as triple reset. This feature provides for the selection of three different offset timing arrangements, namely: (1) favoring inbound traffic during the morning rush hours; (2) favoring outbound traffic during the evening rush hours; and (3) an average setting that proves to be the best compromise available for moving traffic in opposite directions simultaneously.

Many cities that have flexible systems containing cycle change, triple reset, and multiple dial features, unfortunately, do not have automatic time-switch or progress control. They depend on manual selections. Systems depending on manual selection have proved to be, in most cases, unsatisfactory due to the fact that their full flexibility is seldom, if ever, realized. Consequently, for a flexible system to be termed modern, it must have provision for the automatic selection of the various features.

The operation of time switches is well known to those familiar with traffic-control devices, but program controllers may not be so well known. A program controller is actually nothing more than an elaborate time switch whereby different programs of operation can be selected—usually one for each day of the week. Briefly, a program controller usually provides for greater flexibility in the selection of circuits by providing for more frequent and accurate changing of the circuits than can be provided by time clocks or switches.

To summarize, a modern traffic-signal system must have flexibility of timing with automatic control as well as signals that are readily visible at all times. Progressive cities are taking steps towards such modernization.

6,500 Trolley Coaches

MORE than 6,500 trolley coaches are now either in use or on order for cities in the United States, according to E. E. Kearns, Manager of General Electric's Urban Transit Division. Mr. Kearns said that 1,346 trolley coaches were delivered during 1948.

Among major cities working on modernizing programs are Cleveland, with 300 coaches on order to replace eight rail lines and two gas bus lines; San Francisco, with plans for more than 400 coaches during the next few years; and Denver, whose schedule calls for conversion of six of the eight remaining lines to trolley coaches.

The principal operations of trolley coaches are in Atlanta, Ga., with 433 coaches in operation or on order; Milwaukee, with an even 400 coaches; Chicago, 362; Providence, 331; Cleveland, 329; Boston, 315; Seattle, 307; San Francisco, 248; Columbus, 241; Cincinnati, 215; Indianapolis, 212; Brooklyn, 208; and Memphis 204.

Chicagoans Approve Big Trolley Coach

A HUGE hinged trolley coach, operating experimentally on lines of the Chicago Transit Authority, won the nearly unanimous approval of Belmont Avenue riders, according to Walter J. McCarter, CTA general manager. Questionnaires to determine public reaction

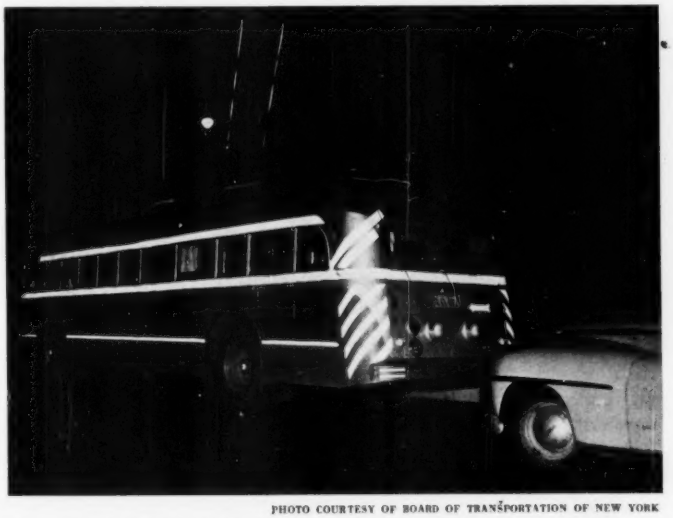


PHOTO COURTESY OF BOARD OF TRANSPORTATION OF NEW YORK

A city-owned and operated trolley coach on the Bergen Street line in Brooklyn, N. Y., is the subject of a current experiment with "Scotchlite." It is applied on the body of Trolley Coach No. 3095 of the New York City Transit System, operated by the Board of Transportation. The reflective tape comes in rolls of plastic sheeting in which are imbedded millions of microscopic glass beads and has an adhesive backing.

to the riding qualities, seating capacity, aisle width and other general features of the unusual vehicle, were distributed to 1,969 passengers. Of that number, 1,802 riders expressed satisfaction with the big bus.

The super trolley coach is 47 feet long and seats 58 passengers, the same number as a modern streamlined streetcar. Built by the Twin Coach Company of Kent, Ohio, the bus is being rented by CTA at a cost of $300 per month.

Seeing Approaching Traffic in a Mirror

TO MAKE it possible for motorists to see around a blind intersection, the Division of Traffic and Safety of the Ohio Department of Highways installed a large mirror to permit drivers a reflected view of approaching traffic.

The trouble spot was at a T intersection formed by the juncture of a township road with State Route 9 in Belmont County, about 1½ miles south of St. Clairsville.

Alignment of the State Route was curved on both approaches, with rather steep grades descending toward the intersection. In addition, an overhead railroad structure was located across the State Route within 30 feet of the intersection, while a highway bridge over a stream was situated some 25 feet on the other side of the intersection. These conditions limited sight distance to less than 60 feet across one corner of the intersection.

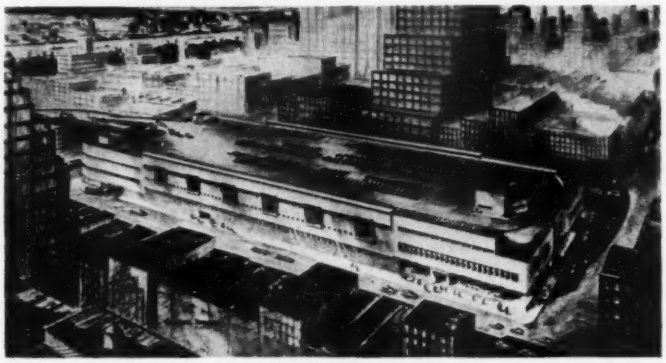
The problem of the safe operation of traffic became acute when a new coal-mine shaft was opened near the township road. Traffic density on this road increased from a few vehicles (fewer than 12 daily) to nearly 1,000 per day. Prior to the opening of the mine entrance, the average daily density of traffic on the State Route was 250 vehicles at an average speed of 40 miles per hour through the intersection.

A 30-by-36-inch plate-glass mirror, mounted in a semi-weather-protected frame, was installed on Route 9 so as to face traffic entering the intersection from the township road. The mirror was placed at an angle to provide a reflected view of Route 9 that opened up the restricted sight distance of less than 60 feet, to a sight distance of more than 500 feet.

As soon as the equipment is available, a highly polished steel plate of larger size, with an electric heating attachment to prevent fogging, will replace the plate-glass mirror.

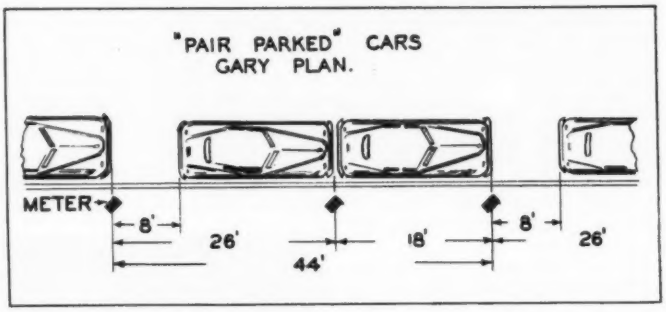
Accidents were frequent at the intersection before the installation of the mirror. There has been no accident reported since the mirror was installed. Possibility of breakage was one of our chief concerns, but experience has indicated that this is no problem.

Port Authority Bus Terminal



An artist's conception of the $20,000,000 Port Authority Bus Terminal to occupy the block between Eighth and Ninth Avenues and 40th and 41st Streets, New York City. The terminal, which will consolidate movement of the 2,500 inter-city buses that daily enter and leave Manhattan, has a direct overhead ramp connection (at left of picture) with the Lincoln Tunnel through which 75 per cent of these buses enter and leave the city. The roof will park 450 cars.

Cars "Pair-Parked" in Gary, Ind.



IN planning the placing of its 1,000 Karpark parking meters, Gary, Ind., settled on parking in sets of two cars, front bumper of the hind car close to the rear bumper of the front car, with eight feet between the two cars and the next sets. The sketch shows the scheme, which is becoming increasingly popular throughout the nation. It gives the driver of any parked car ample space for getting out. The Gary ordinance requires that the front bumper of an automobile be directly alongside the meter. This plan calls for irregular spacing of meters. The national standard allowing 22 feet per car is adhered to.

Meters went into service January 23 with this advice to motorists from City Traffic Engineer Charles J. Walker: "Be sure, first, that you're parallel with the curb and not more than 12 inches away from it, and, second, that your front bumper is in line with the meter. Make certain that you put in enough coins to cover the time you intend to park, for if you don't, you will get an arrest ticket." Mayor Eugene H. Swartz has announced that a city-wide police crackdown on alley and double parking will be launched coincident with the inauguration of meter parking.

Express Buses Popular In Chicago

ARCHER AVENUE'S combination of local and express bus service has "hit the jackpot" of public approval, according to General Manager W. J. McCarter of the Chicago Transit Authority. The reason is the operation of express buses, Archer Avenue being the only CTA line where a combination of local and express bus service is offered. During rush hours, Mr. McCarter says almost half the riders on the route patronize the 15 cent express service, which saves 10 minutes on the 1½-mile run.

22% more NET revenue from fewer meters

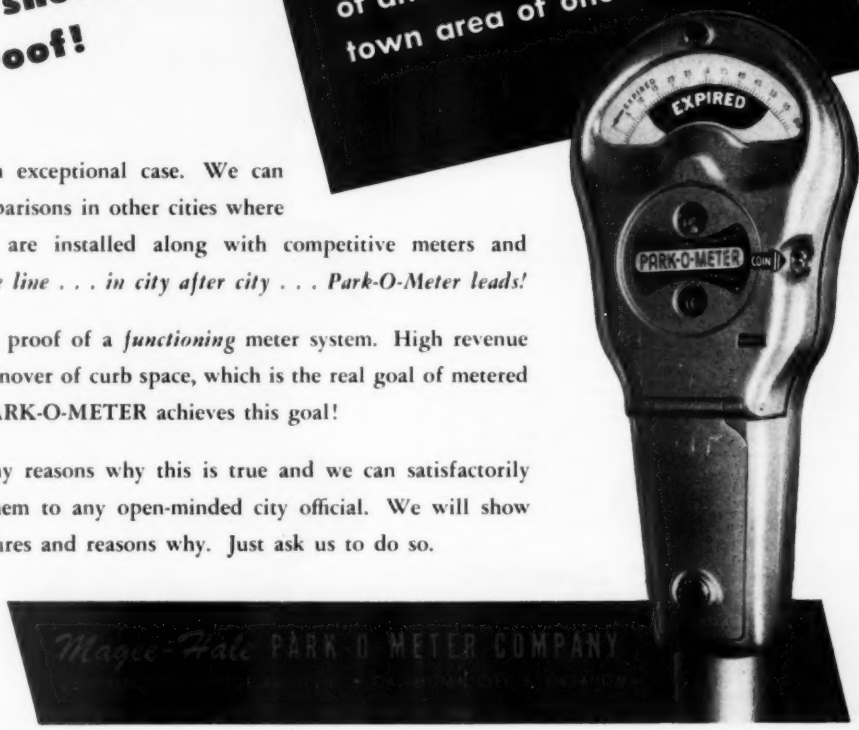
that's the amazing record of 840 PARK-O-METERS as compared with 854 meters of another type in the down-town area of one large city!

ask us to show you proof!

Nor is this an exceptional case. We can show you comparisons in other cities where Park-O-Meters are installed along with competitive meters and *right down the line . . . in city after city . . . Park-O-Meter leads!*

Revenue is the proof of a *functioning* meter system. High revenue means high turnover of curb space, which is the real goal of metered parking. . . PARK-O-METER achieves this goal!

There are many reasons why this is true and we can satisfactorily demonstrate them to any open-minded city official. We will show you actual figures and reasons why. Just ask us to do so.



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Highway Signal gives greater safety

The **"DOUBLE RED"** saves LIVES.

Traffic signal lamps, even new ones, may burn out at any time, but there isn't one chance in a million that two adjacent lamps will ever burn out simultaneously. Therefore, Crouse-Hinds' "Double Red" Traffic Signal with its two red sections operating together eliminates the hazard of a burnt-out red lamp.

If one red lamp burns out, the other carries on, and thus provides a positive STOP indication until the burnt-out lamp is replaced.

The "Double Red" also gives double visibility, thus providing greater safety.

The "Double Red" Signal operates from standard controllers and does not require any extra circuits.

Already in operation in many localities, Crouse-Hinds' "Double Red" Highway Signals have proven their value in reducing accidents and saving lives. Write for additional information.

Crouse-Hinds Catalog 226 lists a complete line of traffic signals, beacons, flashers, and a series of controllers designed to help you solve your traffic control problems ... from simple installations up to the most complex heavy traffic problem. Send for your copy.

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Municipal and Civic Publications

Water Treatment

WATER PURIFICATION CONTROL—*Third Edition, by Edward S. Hopkins. Williams and Wilkins Co., Baltimore, Md.* 1948. 289 *pp.* $4.

Mr. Hopkins brings his text on water treatment up to date. The new edition is written in a simple and easily understood style, and goes into the water-treatment processes thoroughly. The book starts with a short history of water filtration, continues with chapters on coagulation, color removal, removal of iron and manganese, sedimentation, filtration, disinfection, taste and odor control, corrective treatment to prevent pipeline damage, and water softening.

N. Y. Port Authority Analysis

A STUDY OF THE PORT OF NEW YORK AUTHORITY, ITS PURPOSE, ITS ACCOMPLISHMENTS, ITS PLANS FOR THE FUTURE—*By Frederick L. Bird, Dun & Bradstreet, Inc., 290 Broadway, New York.* 1949. 191 *pp.* $5.

A comprehensive review of progress of this bi-state body on the eve of its 28th anniversary, by a nationally known specialist in the field of municipal finance.

The Port Authority, created by Compact in 1921, was constituted as "a body, both corporate and politic, with full power and authority to purchase, construct, lease, and/or operate any terminal or transportation facility" within the Port District. The concept of a regional governmental agency that was to carry out this sweeping mandate without taxing power and without pledging the credit of the two states sounded like a taxpayers' utopia. According to the author, the originators "apparently gave little consideration to the fact that the Authority was being launched without operating income, reserves, or backlog of risk capital." How, step by step, financial and other handicaps have been overcome and major objectives achieved is traced in the 15 analytical chapters of this attractively printed and handsomely illustrated book.

Much of the Authority's success the author attributes to the fact that the organization "is able to operate like an efficient business corporation and to plan and conduct the functions delegated to it in an independent manner, without the uncertainties arising from frequently changing political controls and policies."

The Port Authority was entru-ted with regional planning functions as well as those of constructing and operating revenue-producing terminal and transportation facilities, the study points out. This fact has given it a comprehension of the needs of the region as a whole which is reflected in the multiple objectives of its physical projects.

The excellent study may well become a textbook for the future planning of similar projects in other parts of the country.

A Bi-State Development Agency for St. Louis Area

A BI-STATE DEVELOPMENT AGENCY FOR THE MISSOURI-ILLINOIS METROPOLITAN AREA — *By the Bi-State Commission, 915 Olive St., St. Louis, Mo.* 1949. 31 *pp.*

A report which urges the passage of state legislation for establishing a permanent Bi-State Development Agency, similar in many respects to the Port of New York Authority, for the St. Louis metropolitan area. The proposed legislation is included in the report, and a supplementary 6-page mimeographed statement by W. Philip Shatts, Secretary of the interim Bi-State Commission and President of the Metropolitan Plan Association, traces the growth of the idea in St. Louis. The contemplated agency would deal with interrelated metropolitan problems, including airports, union freight terminals, sewerage and drainage, highways and bridges, mass transportation, railroads, recreation, and conservation.

Inflation and City Government

EFFECT OF INFLATION AND GROWTH ON CITY COSTS AND SERVICES: CASE STUDY OF BERKELEY, CALIF.—*By John C. Bollens and Stanley Scott. Bureau of Public Administration, University of California, Berkeley 4, Calif.* February 1949. *Mimeo.* 11 *pp.*

This report examines changes in city costs and services in an eight-year period of economic inflation and population growth. Although only a few functions of one city are considered, the approach should be a helpful guide to mayors, city managers, budget officers, and department heads in making surveys of their own local-government operations. In addition, it should be especially valuable in interpreting to the public what has been happening to city services and expenditures.

The report shows, for example, that although city-government costs in Berkeley have doubled in eight years, the individual citizen, in return for a smaller percentage of his total income, is actually receiving more services. A portion of the report first appeared as an article in the December 1948 issue of *Public Management.*

Aerial Mapping for City Planning

MAPPING PROVES ECONOMICAL EXPEDIENT IN PLANNING GROWTH OF LARGE CITIES—*Reprint from* Civil Engineering *for December* 1948. *Available from Aero Service Corp., 236 E. Courtland St., Philadelphia 20, Pa.* 10 *pp.*

Three papers presented before the Surveying and Mapping Division of the American Society of Civil Engineers' Pittsburgh meeting. Details of the work accomplished by the Cleveland Regional Geodetic Survey and the Geodetic and Topographic Survey of the City of Pittsburgh are outlined in the first two papers. That mapping by modern photogrammetric methods can further the work of city planners by furnishing needed map information with important economies in time and tax dollars is emphasized in the third paper.

Playgrounds in Boston

CHILDREN'S PLAYGROUNDS IN BOSTON, AN EVALUATION OF SPACE AND LOCATION—*Boston City Planning Board, 43 City Hall, Boston 8, Mass.* 1949. 79 *pp.*

This report is confined to one phase of recreation planning, the provision of suitable play space for children from 6 to 15 years of age. It is intended to be a first step toward the development of a comprehensive recreation plan and a background for evaluation of specific proposals for changes in the playground system.

Typical photos in the report reveal areas in which there are 2,000, 5,000, and 10,000 children without any accessible playground space—evidence of an almost incomprehensible lack of concern and planning for basic human values. The parks which exist in Boston are too often in areas unavailable to children, revealing the need for the developments of parks and playgrounds as a unified system. The report may be found interesting to other officials because of its critical discussion of standards for playgrounds.

Taxis Can Be Regulated

TAXICABS—REGULATION BY CITIES—MODEL ANNOTATED ORDINANCE—*By Charles S. Rhyne. Report No. 127 of the National Institute of Municipal Law Officers, 730 Jackson Place, NW., Washington 6, D. C.* 1949. 49 *pp.* $3.

In addition to the model ordinance, with annotations, this pamphlet lists relevant court decisions and contains in its appendix a chart showing the provisions of ordinances regulating taxicabs in cities throughout the United States.

Local Government Throughout the World

COMPARATIVE LOCAL GOVERNMENT— *By G. Montague Harris, President of the International Union of Local Authorities,* 1936-1948. *Hutchinson's University Library,* 207 *pp.* $1.65. *Copies can be ordered through New York representative of Hutchinson & Co., at 1569 York Ave., New York 28, N. Y.*

This book replaces a previous work by the same author, *Local Government in Many Lands,* which briefly described local-government systems in 33 countries. The book has been revised to incorporate accounts of the present major characteristics of established local-government systems, with emphasis on underlying principles and functions rather than complete country-by-country analyses. The author explains that these were difficult to compile after the war because of the chaotic condition of local government in so many countries.

Major chapters are titled as follows: Areas of Local Government, The Local Authority, Officials, Functions, Finances, Control, and Public Relations.

A careful reading of the book will reveal that, on the whole, municipal government in the United States is considerably more advanced from a technical viewpoint than in most other countries. Mr. Harris stresses again and again the great need for civic education and public relations as municipal functions. Judging from the cases cited, however, no other country has yet chalked up accomplishments along these lines which outdo some of the current efforts in U. S. cities.

The book is written in non-technical language and should be of value as a textbook. It does provide a good over-all view of local government throughout the world in a brief and concise form. Experienced municipal officials may find, however, that more detail would be welcomed within the book's broad framework.

A "Dead Land" Study

DEAD LAND, A STUDY OF CHRONIC TAX DELINQUENCY AND ABANDONMENT—*Housing Authority of the County of Cook, Ill., 33 North LaSalle St., Chicago 2, Ill.* 1949 90 *pp.*

This report poses the problems created for Cook County and municipal governments by the hundreds of thousands of parcels of land that are "dead." Dead land is defined as land which since its subdivision has not been put to an economic use and has failed to have continued speculative value. Much of the land is, after years of idleness, now valuable, but the tax encumbrances exceed its dollar worth. The report declares, "Because of the encumbrances, the lost ownership or the owner's indifference, the legal difficulties, and the tediousness of existing remedies, the land is virtually unavailable to those who can and would develop it."

The report outlines the Housing Authority's interest in the problem and proposes a specific program for the development of encumbered vacant urban land. It is an excellent local follow-up to such works as *Premature Subdivision and Its Consequences,* by Philip H. Cornick, published in 1938, and *A Program for the Use of Tax Abandoned Lands,* published by the American Society of Planning Officials in 1942.

Auto Accident Data Book

THE HUMAN RACE—*The News Bureau, The Travelers Insurance Companies, Hartford, Conn.* 1949. 30 *pp. Free upon request.*

This is the fifteenth annual book of street and highway accident data published by The Travelers Insurance Companies. The booklet urges that states, cities, and communities look to the injury rate as a true measure of success or failure in their safety campaigns. The booklet is amusingly illustrated with many cartoons burlesquing typical auto accident causes.

(*Continued on page* 179)

BIG NEWS IN METERED PARKING

DUAL ANNOUNCES THE *Gearshift* AUTOMATIC

EXPERIENCE in many towns and cities shows that the best laid plans in setting up zone time limits are subject to revision again and again as local conditions change. Time was when this caused real headaches in the re-timing of meters. But no more! The movement of the new Dual *Gearshift* Automatic is changed from 1-hour to 2-hour operation or vice versa by the mere shift of a gear lever . . . instantly . . . on the spot!

But that's not all! Check the *additional* new features now ready to pay off for you in this most modern of meters . . .

1. *Exclusive power-action self-starting for more positive operation.*
2. *New-type flywheel spinner assembly and improved balance wheel provide greater accuracy and* more resets per winding.
3. *Coin combination as well as timing set-up can be changed quickly, easily, on the spot as required.*
4. *New method of keying gears to shafts eliminates possibility of "breaking loose".*

These are only a few of the 19 advancements embodied in the new Dual *Gearshift* Automatic. Be sure to get *all* the facts and you'll agree Dual offers you meter performance at its finest.

THE DUAL PARKING METER COMPANY
A Subsidiary of The Union Metal Manufacturing Company
Canton, Ohio

. . . YOUR BEST ANSWER TO EVERY PARKING PROBLEM

Filter Plant Sets Pace

(*Continued from Page* 105)

is covered by 21½ inches of gravel placed in 6 layers varying from 3½ inches to ⅛ inch. On this gravel bed is placed 25 inches of sand with an effective diameter between 0.62 and 0.70 millimeters.

Each filter has an independent Builders-Providence rate controller with a rated daily capacity of 8 mgd and a maximum capacity of 10 mgd. The venturi tube is 20 by 11¼ inches in diameter and is equipped with a hydraulically operated butterfly valve. The tube and valve are designed to provide a more uniform flow of water through the rate controller at the higher rates of filtration. The hydraulic butterfly valve is actuated by a diaphragm connected to the venturi tube and to a pilot valve. Each of the filters is equipped with an operating gallery with Builders loss-of-head, rate-of-flow, air-expansion, summation and master-control gauges.

Filter Backwash

To backwash the filters, a 30-inch pipeline extends through each pipe gallery and connects to each filter effluent line. This line is connected to the wash-water tank and the pumps. A backwash-rate indicator is located in each gallery to permit regulation of the washing rate. A filter wash requires an average of 3 to 4 minutes.

Each filter has a surface wash of the fixed-jet type. The jets are formed by five ¼-inch holes drilled in a cap screwed to the end of downpipes spaced slightly more than 3 feet apart across the laterals passing over the filters. Four holes slant the water at an angle of 30 degrees; the fifth projects the water straight down. The rate of wash is determined by 16-inch venturi meters, one for each gallery.

Wash-Water Trough Design

Nine wash-water troughs are located in each filter. The troughs differ from conventional designs because of their flat undersides. The troughs are laid at virtually a level grade, and have extra width to give capacity enough to carry away the wash water without flooding during a maximum vertical rise of 24 inches per minute.

The filters discharge through the rate controllers into eight filtered-water basins under the filters. These basins have a combined capacity of 15 mg. The water flows from these eight basins to two filtered-water reservoirs. These have a combined capacity of 32 mg. From here the water flows through the tunnel system to the three pumping stations serving the South Water District.

The plant has a 300,000-gallon steel wash-water tank extending to a height of 84 feet above the lake level. In addition to providing water storage for washing the filters, the tank provides water for most other general processes in the plant.

The whole filtering operation is under the general supervision of the operator in the control station. This room is equipped with nine water-level gauges, seven Wallace and Tiernan residual chlorine recorders, four Leeds and Northrup pH recorders, five integrating and recording flow meters, one water-pressure gauge, wind direction and velocity meters, and two temperature recorders.

In case the entire plant breaks down, the designers have provided a raw-water by-pass that connects to either of the two intakes. The by-pass is surrounded by the two main filtered-water reservoirs. By keeping the area dry, it precludes any possibility of unintentionally by-passing raw water. If the by-pass is used, the water will be chlorinated at the by-pass shaft.

The treatment of the water consists of chlorination, addition of activated carbon, coagulation, sedimentation, and filtration. Lime is used to lessen the corrosiveness of the water, and acid-treated sodium silicate is used at times to aid the coagulation and settling ability of the floc. The chemical applications for 1948 averaged as follows:

	Pounds Per Mg
Chlorine	14.7
Alum	103.1
Activated carbon	24.0
Lime	25.0
Sodium silicate	1.7

The test of the plant is in the quality of the water that it delivers. The new filter plant removes tastes, odors, and coliform bacteria to a far greater extent than is required by public-health standards. These results were obtained during last year's operation:

	Raw Water	*Filtered*
Coliform bacteria per 100 cc	57	0.005
Bacteria per cc	774	1.8
Turbidity	9.4	0.00
Odor threshold	4.9	2.1
Micro-organisms per cc	889	0.4
Soap hardness, ppm	127	130

A total of 116,473 million gallons of water was filtered in 1948. The cost of operations was as follows:

	Total Cost	*Cost per Mg*
Salaries	$592,066.00	$5.08
Chemicals	374,825.00	3.21
Electric power	127,602.00	1.09
Fuel	45,300.00	.39
Materials, supplies, repairs	106,532.00	.91

With the operation of this big plant, and with the kind of performance that these results provide, the designer in the future will have little reason to fear using filter rates of 4 gallons per square foot per minute as the practice is here. Many should find themselves able to step up the capacity of existing plants, and others should be able to reduce markedly the initial cost of new plants. Many others will look to the Chicago plant as precedent for installing sludge collectors in only part of the settling basin, thereby reducing the initial cost. Many others will use the Chicago plant to bolster the arguments favoring fixed-nozzle surface-wash installations, and others will count the operation of the Chicago plant as sufficient evidence to confirm the use of sodium silicate as an indispensable aid to good coagulation. The size of the plant is commanding, but more important is the significance of the treatment it provides in the field of water supply and treatment.

The plant operates under the direction of Oscar E. Hewitt, Commissioner of Public Works; John P. Wilson is Deputy Commissioner. W. W. DeBerard is City Engineer. John R. Baylis is Engineer of Water Purification.

Norfolk Undertakes Study For Urban Redevelopment

CHARLES L. KAUFMAN, Chairman of the Norfolk Redevelopment and Housing Authority, has announced that a contract has been made with the firm of Harrison, Ballard and Allen, Housing and Planning Consultants of New York City, and that work has begun on the redevelopment program for the City of Norfolk.

Anticipating the early passage by Congress of legislation under which grants will become available to cities for slum clearance and housing, the Norfolk City Council recently appropriated $25,000 to enable the Norfolk Authority to make the required preliminary studies and plans. The work now being undertaken is scheduled for completion in September 1949, and will provide Norfolk with a basic long-range program for both slum clearance and housing. This will place Norfolk in the advantageous position of being able to take prompt action when the contemplated legislation is enacted.

The work of the consultants will be carried on under the direction of Lawrence M. Cox, Executive Director of the Norfolk Authority, and president of the National Association of Housing Officials. It will be coordinated with the programs and work of the Planning Commission, the Tunnel and Bridge Authority, the Commission on Minimum Housing Standards, the Annexation Program, and of state and federal groups, with a view to developing the most comprehensive and useful program possible.

Every effort will also be made to enlist the cooperation and interest of private enterprise in carrying out the program.

Model Plan...

FOR MODERN PARKING

with **ALFCO TWIN**

AUTOMATIC PARKING METERS

With a model plan for modern traffic control, Alfco Twin Automatic Parking Meters offer you more advantages at less cost than any other meter.

It parks two cars instead of one. It has but one mechanism and one collection box, yet serves two parking spaces instead of one. It cuts maintenance and collection costs in half.

It is more easily policed, provides clearer vision of traffic lanes, thus fewer accidents and traffic holdups.

Note the parking comparison above: the top cars show old style single meter parking. The lower autos illustrate the spacious parking area the Alfco Twin makes possible at no loss in the number of spaces.

Adopt the model plan for modern parking with the new Alfco Twin Automatic Parking Meters. Write for fully illustrated literature at no obligation.

Models available to suit your requirements.

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INTERNATIONAL METERS, INC.

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General Sales Office: 41 E. 42nd Street, New York 17, N.Y.

SUBSIDIARY OF
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ELMIRA NEW YORK U.S.A.

ALFCO

A Desert Transformed

(*Continued from Page* 107)

handles already a considerable freight and passenger tonnage, including large numbers of airborne immigrants arriving daily from Europe.

Haifa, the second largest city of Israel (population 125,000), and the major port of the eastern Mediterranean coast, is the terminal of the Iraq oil line and forms the center of the country's heavy industries. Among these is the Nesher cement plant, located outside the city, which produced 255,000 tons in 1946 and which is expected to supply most of the cement needed for the expanding building program. Large suburban residential areas, now growing rapidly in the Haifa Bay region, were originally planned by Sir Patrick Abercrombie.

Emphasis on Housing

The steady flow of immigrants arriving from Europe, North Africa and other parts of the world, has intensified an already critical housing shortage. In spite of large housing and suburban developments, many of which are designed as modern garden communities and cooperative apartment projects, housing construction has not been able to keep pace with population increase, especially since World War II had slowed down building here as in most other countries. Although 21,000 dwelling units have been erected since the war, it is estimated that 60,000 new dwellings are needed during the next two years alone to shelter immigrants. This problem of overwhelming dimensions is being attacked with great courage and determination.

A National Housing Company has been set up with an initial capital of $20,000,000, financed jointly by the Jewish Agency, the National Fund, six existing semi-public housing companies, and the Israel government. The capital is to be multiplied by investments from abroad, private capital, and a part of the Import-Export Bank loan. Immediate construction of 10,000 dwellings is planned.

Present plans envisage large-scale housing projects of at least 500 units each, as well as standardization and on-site mass production, using heavy machinery and United States methods. Levitt and Sons, Long Island, N. Y., builders, have announced the construction of a 5,000-family community north of Haifa. One Israel building firm has signed contracts to import a set of Tournalayer housebuilding machinery from Texas to pour concrete houses in reusable forms. Another American firm has been invited by the Ministry of Reconstruction to investigate possibilities of monolithic concrete house construction through adaptation of heavy road-building machinery.

Regional Planning and New Towns

From a long-range point of view, perhaps the most important and exciting work is being done by the Planning Department of the Ministry of Reconstruction in shaping population distribution policies, regional development schemes and plans for new towns, as well as for the expansion of old ones for the future population of Israel.

Although the greatest encouragement is given to agricultural settlement, it is estimated that about 80% of the population will, for economic and other reasons, settle in urban areas. The main town-planning task is to limit the growth of the two metropolitan centers of Israel — Tel-Aviv and Haifa — and to decentralize population, industry and housing over the entire country. Plans are being drawn up for a great expansion of existing regional urban centers such as Tiberias in the North and Beersheba in the southern Negev. The development of a number of new towns is also contemplated. These will be supported by local industries and backed by rural hinterlands, to be intensively developed on a regional basis. If necessary, subsidies and grants-in-aid will be provided for the initial development of new urban communities which are eventually expected to become self-supporting medium-sized cities of 50,000 to 60,000 people each. Such a population will be able to lead an economically sound and culturally attractive life in these towns. In order to achieve this, educational, recreation and social facilities will be developed simultaneously with housing. Good highways and transportation facilities to all parts of the country will link urban and rural areas, and will offer speedy connections with the port terminals of Tel-Aviv and Haifa.

Special consideration will be given to Jerusalem's isolated position; a new highway by-passing Arab-held areas is already connecting this ancient city with Tel-Aviv.

Coupled with the preparation of development schemes is the work on new planning legislation which will take a more positive approach; it will provide incentives for good planning and methods of pooling lots now held in diverse ownerships in order to permit modern types of neighborhood development and subdivision layouts within the framework of master plans.

Undoubtedly planners the world over will watch with interest developments in Israel, where a unique opportunity presents itself to carry into practice the latest theories of town and country planning.

City Tells Its Story

(*Continued from Page* 128)

MPR. Because it goes into the homes with the newspaper, the report is bound to be read by a great many more people than would otherwise even see the usual annual municipal report. Such municipal reporting also tends to strengthen official-press relationships. Besides, the cost factor should usually be no more than for the same edition in booklet form, and in many cases ought to be less.

This way of handling the report goes a step further than using just the newspaper format, either tabloid or eight-column page, as a style of presentation. It capitalizes upon the established circulation of the local press as a means of gaining readership and interest in municipal affairs.

The only question in connection with the newsprint medium is one of the longevity of the paper itself—for, as everyone knows, newsprint tends to yellow with age and is usually cast aside by the average citizen in a short time rather than being kept for reference purposes. A possible solution might be —and this may not yet be practical—a chemically treated newsprint.

Possibly later in the year it will be in order to brief some of the other salient facts and factors with respect to this kind of municipal reporting in the process of discussing the annual report in detail as an MPR medium.

In the meantime, study of both the Las Vegas and Wichita reports, if you can get copies, will give you a good idea of what can be done if you want to use this method of increasing public interest. At the very least, it exposes the newspaper-reading public to the annual report without any effort on the part of the individuals—and with only slight chance that it will be laid aside without at least a good scanning.

Good Place To Meter

By the United Press.

GARDNER, Mass., Jan. 25.— Police Chief Cyrille Leblanc says one resident is delighted with the newly installed parking meters.

It seems the man often meets his wife downtown but she's always a few minutes late. Never admits it, though.

So her husband now meets her near a parking meter, dropping in a few pennies when he reaches the rendezvous. When his wife arrives late there's no argument. He merely points to the time ticked off by the meter.

If your city is not metered...

or if your present meters are obsolete...

or if your traffic flow needs greater guidance...

Ask to see these valuable CONTROL DEVICES

SCHOOL
ZONE
MILLER
The parking meter that is first choice all over America.
AUTOMATON
The amazing new parking meter that actually winds itself.
Duncan Safety FLASHERS
The all-electric traffic sign that commands greater attention and obedience.

Here are traffic control devices that set the pace others follow. Write today for illustrated catalog and details on how easily they can be purchased.

DUNCAN METER CORPORATION

835 No. Wood Street, Chicago 22, Illinois

When writing Duncan Meter Corp., please mention THE AMERICAN CITY

City Rebuilding Re-examined

RETHINKING URBAN DEVELOPMENT—*By Coleman Woodbury and Frederick A. Gutheim. Urban Redevelopment Series No. 1. Public Administration Service,* 1313 *E. 60th St., Chicago* 37, *Ill.* 1949. 26 *pp.* $1.

This is the first in a series of pamphlets by the Urban Redevelopment Study. It is an analysis of the present situation and outlook for urban redevelopment in the post-war period, based to some extent upon a conference officially titled "The Obstacles to Urban Redevelopment in American Cities," which was held in Chicago in May 1948. The conferees included about 40 officials of planning, redevelopment, and housing agencies, and other persons concerned with the physical development of urban areas.

The pamphlet describes operating problems of urban development agencies and outines needed research in such areas as finance and subsidy, attitudes of prospective investors, industrial movements and relocation, benefits from redevelopment, lease and sale of land acquired, and defense and security considerations in redevelopment.

Park and Recreation Week Brochure

PARK AND RECREATION WEEK BROCHURE—*Reprint from Ford TIMES, May* 1949 *issue.* 32 *pp. Available from Park and Recreation Week,* 116 *South Michigan Ave., Room* 1305, *Chicago* 3, *Ill.* 10 *cents per copy;* $5 *per hundred for distributing groups.*

A handsome, full-color, illustrated brochure which is being provided by the Ford Motor Company for local use in connection with "Park and Recreation Week." It contains many colored maps, sketches, and photos of park and recreation areas. Accounts of the development of federal, state, municipal, and county park and recreation services throughout the country are included. One chapter has a complete listing of the Wildlife and Wilderness Areas of the U. S. Forest Service. Sources of general recreation information are also listed in a two-page spread. The brochures contain no advertisements beyond a simple statement on the back cover stating that they are supplied through the courtesy of Ford and Lincoln-Mercury dealers.

Comprehensive Housing Program for Pittsburgh

A HOUSING PROGRAM FOR PITTSBURGH AND ALLEGHENY COUNTY—*By Max Nurnberg, Economist and Housing Consultant. Allegheny Conference on Community Development,* 508 *Magee Building, Pittsburgh* 22, *Pa. January* 1949. *Mimeo.*

This is Part II of a most comprehensive and thorough report on housing conditions in Pittsburgh and Allegheny County. To effectuate the program recommended, the report calls for setting up a Housing Development Board of Pittsburgh and Allegheny County to be composed of all elements of the community interested in housing.

The report, based on careful documentation and examination of all possible factors, reveals that a shortage of 51,000 dwelling units exists in the area. The needs for stimulation of rental housing, rehabilitation, slum clearance and redevelopment, and county-wide assistance to housing cooperatives are emphasized. Six recommendations are made for a long-range housing program.

Assessing Officers Yearbook

ASSESSMENT ADMINISTRATION: 1948—*Papers presented at the Fourteenth National Conference on Assessment Administration. National Association of Assessing Officers,* 1313 *E. 60th St., Chicago* 37, *Ill.* 185 *pp.* $3.

Includes the program, registration, and all papers presented at the National Conference on Assessment Administration held at Milwaukee, September 27-30, 1948. Varied assessment problems were discussed in panels, lectures, and round-table discussion groups. Of special interest is the report of the panel on "What Adjustments Should Assessors Make on Account of Current Prices?"

Four Tax Folders

MY LOCAL TAXES ARE TOO LOW, YOUR CITY AND MINE, DEMOCRACY BEGINS AT HOME, and I GET MY MONEY'S WORTH FROM LOCAL TAXES—*By Carl J. Faist, Director of Finance, Saginaw, Mich. Four folders.* 1949. 100 *copies for* $2; *prices for quantities on request.*

The article written by Mr. Faist, "My Local Taxes Are Too Low," which originally appeared in the April 1948 issue of THE AMERICAN CITY was subsequently adapted for publication in *The New York Times, The Saturday Evening Post,* and *The Reader's Digest.* Because of many requests for reprints, the author has expanded the original theme into four short articles and made them available in attractive folder form suitable for enclosing with water bills, tax statements, general mail, etc. These folders may provide some municipalities with immediately usable public-relations material at low cost.

Public Relations Symposium

YOUR PUBLIC RELATIONS—*Edited by Glenn Griswold and Denny Griswold, Funk and Wagnalls Co.,* 153 *E. 24th St., New York, N. Y.* 634 *pp.* $7.50.

The well-known Griswolds have pulled into this one volume the experience and opinions of some of the best practical public-relations minds in the country. Thirty-two experts, from as many phases of public-relations activity, have each contributed a chapter. The editors' notes after each chapter are an important part of the compendium, adding considerable original material.

Although municipal public relations, as such, is not touched upon in the book, there is much of value to mayors, city managers, department heads, and other officials in the way of basic techniques useful in the conduct of relations between local authorities and local publics.—H.D.N.

How Can Your City Obtain Funds?

FINANCING LOCAL GOVERNMENT—*By Laurence Lee Pelletier, Ph.D. Maine Municipal Association, Hallowell, Maine, December* 1948. 190 *pp.*

Although this thorough study is concerned primarily with finances in Maine's municipalities, it draws on the status of local finances in all 48 states for comparative material. The need in many municipalities for new sources of income has been met in some states by drastic enabling legislation, by state financial assistance, and by state assumption of local functions. These attempts to solve the problem are discussed in some detail, as are various forms of local taxes, old and new. Comparative tables appear in the appendix. The study was prepared for the Special Tax Committee of the Maine Municipal Association by the Bureau for Research in Municipal Government of Bowdoin College.

Planning Courses in The Public Schools

EDUCATIONAL ACTIVITIES OF PLANNING AGENCIES WITH THE PUBLIC SCHOOLS—*Reprint from "The High School Journal," March-April* 1949. *Published by the Department of City and Regional Planning, University of North Carolina, Chapel Hill, N. C.* 48 *pp.* 30 *cents.*

An excellent series of articles discussing problems involved in the introduction of courses on community planning into public-school programs. The booklets include the following articles: "A Survey of the Educational Activities of Planning Agencies," "The Greensboro School Projects in Planning," "Philadelphia Schools Share in City Planning," "City and Neighborhood Planning in Detroit Schools," "Planning a Tennessee Rural School," and "What Have We Learned from Planning Projects in School?" It also contains a bibliography on the subject. Guest editor for the publication was Mary Margaret Carroll, planning technician with the Tennessee State Planning Commission.

Municipal Power and Its Importance

PUBLIC ORGANIZATION OF PUBLIC POWER, CONDITIONS, POLICIES, AND PROGRAMS—*By John Bauer and Peter Costello, Harper & Brothers,* 49 *E. 33rd St., New York* 16, *N. Y.* 1949. 263 *pp.* $4.

This is, for our time and social climate, a controversial book—containing as it does powerful factual arguments for public ownership of all electric power. The author, John Bauer, as director of the American Public Utilities Bureau has had thirty years of close professional contact with electric-power developments.

In his preface, Dr. Bauer declares that at the outset he definitely favored private organization under public regulation, and that up to 1930 his studies and efforts were directed primarily to needed regulatory improvements. "Since then," he says, "my thinking has gradually shifted, due to the inherent difficulties of regulation, to the deep conflicts between private and public interests, and to the prevalent corporate distortions, with their adverse repercussion upon regulation. Under existing conditions, I have no doubt that comprehensive public displacement of the private electric systems, as outlined in this book, will be decisively in the public interest for expanding production and better living."

In marshaling an impressive array of facts, the author makes it clear that his recommendations deal solely with electric power and that he does not advocate public ownership of any other industry. His proposals avoid central authoritarian control, but do provide for comprehensive coordination and separation of federal, state, and local systems.

Several chapters of the book are devoted to discussions of municipal-power possibilities and problems. The author believes that the more likely advance of public ownership will be through local programs of municipalization. Urging that every city consider the advantages of municipalization, he declares:

"The officials should see the basic importance of low electric rates for future industrial advancement. They should realize that local industry competes with distant low-rate areas. They should look at municipalization from the standpoint of getting low-cost power to meet regional competition and to provide for economic and social progress."

The book was written for the purpose of influencing public policy in this most basic industry. There can be no doubt but that, if it is widely read, it will tend to accelerate municipalization of power—particularly in the industrial centers of New England, Middle Atlantic, and North Central states, which have been subjected to especially high rates.

Pacific Coast Building Code

UNIFORM BUILDING CODE—*Pacific Coast Building Officials Conference.* 124 *West Fourth St., Los Angeles, Calif.* 1949 *Edition. Standard form,* 304 *pp.,* $3.75 *Short form,* 80 *pp.* $1.50.

This building code was originally adopted in 1927 by the Pacific Coast Building Officials Conference and has since undergone a number of revisions and additions. There are now about 500 cities which operate either under the Uniform Building Code or the Uniform Building Code Short Form. The standard version of the code is well indexed and contains several useful supplementary tables. The short form consists of excerpts from the parent document, and its provisions are intended to cover most construction requirements in smaller municipalities.

How Michigan's Townships Are Governed

A MANUAL OF TOWNSHIP GOVERNMENT IN MICHIGAN.—*By Claude R. Tharp. Michigan Governmental Studies No.* 18. *University of Michigan.* 1948. 142 *pp.* $1.50.

Township meetings, charters and finances, and the powers and duties of each township officer and board were summarized in this manual. The purposes and methods of authorization for township taxes and indebtedness are concisely shown in two tables at the end of the book.

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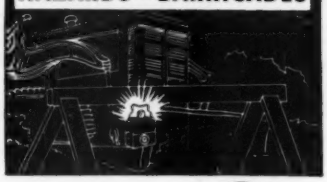

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Property Taxation in Australia and New Zealand

IMPRESSIONS OF PROPERTY TAXATION IN AUSTRALIA AND NEW ZEALAND — *By Harold M. Groves, Professor of Economics, University of Wisconsin. Reprinted from Land Economics, February* 1948. *Pages* 22-48.

In this discussion of real-estate taxation in the South Pacific countries, the author disclaims any intent to promote or discourage the idea that land is especially suited for taxation. His purpose rather is to describe and explain certain taxation practices and ideas that have a unique development in these English-speaking countries. He points out that while the seeds of doctrine scattered by Henry George fell on uncongenial soil in the United States, they have fared much better in Australia and New Zealand.

New York City's Organization

GOVERNMENTAL ORGANIZATION WITHIN THE CITY OF NEW YORK—*Institute of Public Administration, 684 Park Ave., New York* 21, *N. Y. Fifth Edition, March* 1, 1949. *Chart and* 21-*page pamphlet.*

This chart and pamphlet, first published in 1926, were last issued in 1939. The new chart shows the important changes in the structure of the municipal government since that time, as well as the complexity of the administrative mechanism. Each working unit of the local government is shown, together with a statement of its functions and the source of appointment of its responsible administrative head, and the number of employees in each establishment.

In conclusion, the pamphlet states: "Thus viewed over the years, the structure of local government in New York City shows geographic stability, together with increasing home rule, the withering away of the counties and of the administrative responsibility of the boroughs, the expansion of special interstate, state and federal activities in the area, the expansion of the functions of central city government and the clear focusing of administrative responsibility and power in the Chief Executive, the Mayor."

Housing References

READING LIST ON HOUSING IN THE UNITED STATES—*Housing and Home Finance Agency, 1626 K Street, NW., Washington* 25, *D. C. Revised January* 1949. 48 *pp.*

A selective list for persons interested in the general field of housing. The books are listed in two sections: (1) Housing and Home Finance Agency publications listed alphabetically, and (2) government and privately published works listed by topic. In addition, there is an appendix which lists the principal periodicals which deal with housing and related subjects and gives a chronological listing of recent legislative documents of interest in the housing field.

Sacramento Planning Bulletin

PLANNING TRENDS, SACRAMENTO METROPOLITAN AREA—*Sacramento City Planning Commission, City Hall, Sacramento, Calif. Vol. I, No.* 1. *January* 1949. *Mimeo.* 5 *pp.*

First in a series of monthly bulletins by the Sacramento City Planning Commission designed to keep the citizens informed on topics relative to the orderly development of the area. An excellent public relations idea which should be especially useful in those municipalities where there is no official or unofficial regional planning organization.

Planning and Housing Reports

BALTIMORE, MD.—Report on Wholesale Market Facilities for Greater Baltimore Area. Maryland State Planning Commission, 100 Equitable Building, Baltimore 2. Illus. Tables. Graphs. 83 pp. 50 cents.

BERGEN COUNTY, N. J.—Annual Report of Progress 1948. County Planning Board, County of Bergen, Hackensack. March 1949. Mimeo. 17 pp.

CEDAR GROVE, N. J.—A Comprehensive Plan for the Township of Cedar Grove. By Scott Bagby, 22 Pleasant Ave., Montclair, N. J. Feb. 1949. Mimeo. Maps, 42 pp.

CHICAGO, ILL.—Redevelopment Project No. 1. Chicago Land Clearance Commission, 69 West Washington St., Chicago. March 1949. Charts. Maps. Tables. 56 pp.

KEWANEE, ILL.—The Kewanee Story. Illinois State Housing Board, 160 North LaSalle St., Chicago. March 1949. Illus. Unpaged.

MARYLAND—State Planning, 1947-1948. Maryland State Planning Commission, 100 Equitable Building, Baltimore 2. Jan. 1949. Mimeo. Graphs. Tables. Illus. 105 pp. 25 cents.

MICHIGAN—Community Planning Annual, Jan. 1949. Michigan Society of Municipal Planning Officials. Mimeo. Tables. 44 pp.

OHIO—Ohio Planning Directory 1948. Ohio Planning Conference, 501 City Hall, Cleveland 14. Mimeo. 36 pp. $1.

ONTARIO, CANADA—Proceedings of the Ontario Citizens' Planning Conference, Oct. 1948. Community Planning Branch, Dept. of Planning and Development, 1175 Bay St., Toronto. 32 pp.

PROVIDENCE, R. I.—Rebuilding Providence. Annual Report 1948. Providence Redevelopment Agency, Providence. Illus. Maps. 16 pp.

ROCKY HILL, CONN.—A Guide to the Development of Rocky Hill. Town Planning and Zoning Commission. Feb. 1949. Maps. 24 pp.

SIMSBURY, CONN.—A Progress Report 1948. Prepared for the Town Plan Commission by Th. H. Desmond, 1 Drake Hill Rd., Simsbury. Maps. Unpaged.

UNITED STATES—Task Force Report on Lending Agencies. (Appendix R.) Prepared for The Commission on Organization of the Executive Branch of the Government. Jan. 1949. 108 pp.
—State Spending for Veterans' Housing. By Harold Robinson and John I. Robinson. Reprinted from Wisconsin Law Review. Jan. 1949. 16 pp.
—Task Force Report on Natural Resources (Appendix L). Jan. 1949. 244 pp.
—Task Force Report on Public Works (Appendix Q). 81 pp
—Task Force Report on Revolving Funds and Business Enterprises of the Government (Appendix J). 176 pp.
—Task Force Report on Water Resources Projects (Appendix K). 65 pp.
—Technical Bulletin. Special Issue. Housing and Home Finance Agency. Washington 25, D. C. Jan. 1949. Mimeo. Illus. Graphs. Charts. 245 pp.

Other Reports Received

ALLEGHENY COUNTY, PA.—Reporting on the Four County Industrial Inventory. Allegheny Conference on Community Development, 508 Magee Building, Pittsburgh 22. Mimeo. 15 pp.

ATHOL, MASS.—Annual Report of the Water Commissioners. Dec. 1948. Tables. 21 pp.

BROOKLINE, MASS.—Annual Report of the Town Officers 1948. Tables. Charts. 476 pp.

CHARLESTON, S. C.—Metropolitan Charleston. By Charles L. Larsen and R. H. Stoudemire, Bureau of Public Administration, University of South Carolina, Columbia. 28 pp.

DETROIT, MICH.—Some Financial Facts About Your City. The Common Council, prepared by the Auditor-General's Office. Graphs. 4 pp.

GAINESVILLE, FLA.—Subsurface Sewage Disposal. By J. E. Kiker, Jr., Florida Engineering and Industrial Experiment Station, University of Florida, Gainesville. Dec. 1948. Graphs. Illus. 72 pp.

GREAT BRITAIN—Water Pollution Research, 1947. Department of Scientific and Industrial Research, 4-12 Regent Street, London, S.W.1. Published by H. M. Stationery Office, York House, Kingsway, London, W.C.2 Illus. Tables. Graphs. 55 cents.

GREENFIELD, MASS.—Annual Report of the Town Officers for the Year Ending Dec. 1948. Tables. 295 pp.

JAMESTOWN, N. Y.—Annual Report 1948. Board of Public Utilities, City of Jamestown. Tables. 28 pp.

KENTUCKY—Tenth Annual Yearbook of the Kentucky State Board of Registration for Professional Engineers. University of Kentucky, Lexington 29. Illus. Tables. 149 pp.

LEXINGTON, KY.—Budget 1949. Audit Report 1948. Graphs. Tables. 79 pp.

LYNCHBURG, VA.—Lynchburg Distribution Road, General Plan. Commonwealth of Virginia, Dept. of Highways. Prepared by L. S. Waterbury of Parsons, Brinkerhoff, Hall & MacDonald, 51 Broadway, New York 6. Illus. Charts. Maps. 76 pp.

MICHIGAN—Salary and Wage Data. Michigan Cities of More Than 10,000 Population 1948-1949. Information Bulletin No. 59. Michigan Municipal League, 205 S. State St., Ann Arbor, March 1949. Mimeo. Tables. Unpaged. $1.25.

NEW KENSINGTON, PA.—Annual Report of the Controller for Year Ending Dec. 1948. Mimeo. Tables. 30 pp.

OAK PARK, ILL.—Annual Report 1948. Department of Public Works. Mimeo. Tables. 72 pp.

PENNSYLVANIA—Sewer Rentals in Pennsylvania Municipalities. Institute of Local Government, The Pennsylvania State College, State College. 1949. Tables. $1.

PORTLAND, ORE.—Budget Facts and Financial Statistics of Multnomah County (Portland), 1948-1949 Annual Report of the Tax Supervising and Conservation Commission of Multnomah County. Charts. Graphs. 78 pp.

ROANOKE, VA.—Financial Report for Fiscal Year Ended Dec. 31, 1948. By the City Auditor. Tables. 66 pp.

ROCHESTER, MICH.—Sewage Treatment Plant, Annual Report 1948. Mimeo. Graph.

SAN FRANCISCO, CALIF.—Annual Report for Fiscal Year Ending June 1948. Department of Public Works, 260 City Hall, San Francisco 2. Illus. Graphs. Tables. Charts. 189 pp.

SPRINGFIELD, MASS.—The Springfield Building Code (An Evaluation Study). Future Springfield, Inc. Prepared by Emil J. Szendy, Code Consultant. Charts. 80 pp.

TEANECK, N. J.—Your Town. How Your Business Is Managed. Illus. Tables. Maps. Unpaged

UNITED STATES—National Airport Plan for 1949. United States Department of Commerce, Civil Aeronautics Administration, Washington, D. C. Charts. Graphs. Maps. 173 pp.
——Report of Committee on Streets and Street Railway Pavement Construction and Maintenance. American Road Builders' Association, 1319 F St. NW., Washington, D. C. Technical Bulletin No. 153. 1948. Illus. 17 pp.
——To Fulfil Our Promises. By Leo M. Cherne. National Citizens' Council on Civil Rights, 20 West 40th St., New York 18. 16 pp.

VIRGINIA—Business Tax Rates in Virginia Cities. By Chester W. Bain. League of Virginia Municipalities and Bureau of Public Administration. University of Virginia, Charlottesville. 1949. Mimeo. 46 pp.
——Gas Rates in Virginia Municipalities. League of Virginia Municipalities, 902 Travelers Building, Richmond 19. March 1949. Report No. 315. Mimeo. Tables. 34 pp. $1.
——License Taxes on Wholesale and Retail Merchants in Virginia Municipalities. League of Virginia Municipalities, 902 Travelers Building, Richmond 19. Jan. 1949. Mimeo. 19 pp. $1.

WASHINGTON—Avenues and Vistas for Bringing Library Materials to Children and Young People. Bureau of Governmental Research and Services, University of Washington, Seattle. Jan. 1949. Mimeo 62 pp.
——Regulation of Frozen Dairy Foods. Bureau of Governmental Research and Services, University of Washington, Seattle, in cooperation with the Committee on Frozen Dairy Foods. Jan. 1949. Mimeo. 59 pp.

WAYCROSS, GA.—Annual Report for Fiscal Year Ending Dec. 1948. Charts Graphs. Unpaged.

WICHITA, KANS.—Annual Report. Newspaper Supplements. Feb. 27, 1949. *The Wichita Sunday Eagle* and *The Wichita Sunday Beacon*. 8 pp each.

WILLIAMSTOWN, MASS.—Annual Report 1948. Tables. 151 pp

YOUNGSTOWN, OHIO—Annual Report 1948. Division of Engineering, Dept. of Public Works. Mimeo. Charts. Tables. 57 pp.

HAWAII—Biennial Report of the Board of Water Supply, City and County of Honolulu, 1947-1948. Illus. Maps. Charts. 141 pp.

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All Mark-Time Parking Meters shipped from our factory after April 28, 1949 will be the world's most perfect parking meters.

Revolutionary engineering improvements have been made. The problems which beset all industry during the postwar years have been licked. Mark-Time Parking Meters have moved forward, far ahead of anticipated goals of efficiency. After April 28, we challenge the world to find a parking meter equal to the Mark-Time.

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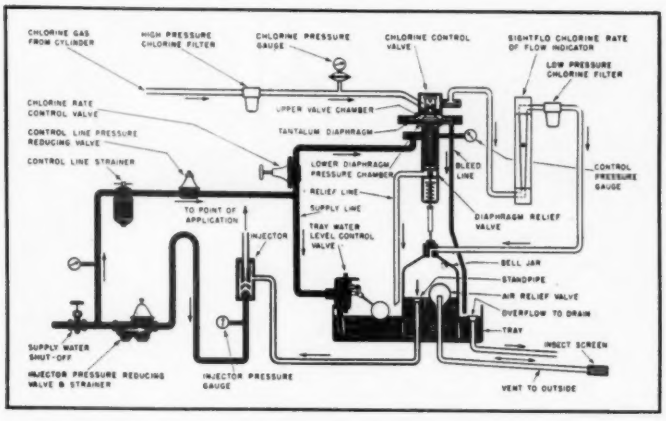
News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

New Chlorinator Introduced



The Builders Model CVS Chlorinizer is designed to meter chlorine gas and to produce and deliver a chlorine-water solution to the point of application.

Equipped with automatic safety devices that shut off the flow of chlorine gas in the event any condition occurs which would affect its safe and accurate operation, the mechanism maintains the chlorine gas under vacuum from the control valve to the injector to minimize the possibility of leaks.

A wide-range metering system requires changing neither orifices nor scales; tray-produced chlorine odors are eliminated by circulating tray water used in producing the solution; hot-water or bell-jar heaters are not required because the vital control parts handle dry, inert chlorine gas and completely eliminate chlorine "ice" difficulties. The chlorinizer is manufactured by Builders-Providence, Inc., Providence 1, R. I.

The new board of directors of Layne & Bowler: Lee Rogers, Layne-Minnesota; J. P. Lawlor, General Filter Co.; S. L. Olson, Layne-Texas; A. W. Ross, Layne-New York; M. H. Anderson, General Filter Co.; T. M. Ragsdale, Layne-Central, and A. G. Schreiber, General Filter Co.

J. R. Brown with Trojan Tool

James R. Brown has resigned as vice-president in charge of sales promotion and representative of the National Water Main Cleaning Co., 50 Church St., New York, N. Y. He had been with National for almost 20 years.

Mr. Brown will be associated with the Trojan Tool Equipment Co., 141 West Jackson Blvd., Chicago 4, Ill., exclusive distributor in the midwest area for the equipment of the Flexible Sewer-Rod Equipment Co. and the Flexible Underground Pipe Cleaning Co., of Los Angeles, Calif.

Layne & Bowler Adds General Filter Co.

Layne & Bowler, Inc., Memphis 8, Tenn., manufacturer of vertical turbine pumps, has added to its organization of 16 affiliated well-water supply companies the General Filter Co. of Ames, Iowa.

Organized in 1935 by J. P. Lawlor, a former Layne engineer who remains as president, General Filter is a company of engineers and chemists specializing in water conditioning and the manufacture of household soft-water units.

Trend Toward Powered Units In Sewer Cleaning

According to P. A. Fuchs, 80-year-old president of the Turbine Sewer Machine Co., 5210 W. State St., Milwaukee, Wis., the trend in sewer-cleaning operations is shifting from hand-operated machines to power-driven units. The Turco Maxi-Power sewer cleaners are made in seven models to suit the requirements of municipalities of any size.

P. A. Fuchs

During the past 60 years Mr. Fuchs has seen his company grow to be one of the largest of its kind in the world. Mr. Fuchs, who has constantly kept abreast of all happenings in the sewage field, is 80 years old. He predicts that 1949 will be one of the most productive years the company has seen.

Wilson Represents Atlas Mineral Products

P. S. (Syd) Wilson, Glen Ridge, N. J., will represent the Atlas Mineral Products Co. in New York, New Jersey, and Connecticut, according to a recent announcement by this company. He will handle Tegul-Mineralead, used for jointing cast-iron pipe—a sulphur compound plasticized with synthetic rubber. This gives it greater adhesion to metal and vitrified surfaces, makes it more resistant to vibration, and decreases the coefficient of expansion and contraction.

P. S. Wilson

In addition, Mr. Wilson will handle the other Atlas products used in the water-works field, including Hyde-Ro ring packings, joint runners, and similar equipment.

Mr. Wilson is handling this as a manufacturer's representative along with several other products allied with water supply.

Mr. Wilson is well known to the water-works field. He is chairman of the New Jersey section of the American Waterworks Association and was winner of the Fuller Award in 1945.

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GET rid of unsightly, health-menacing dumping grounds — bury garbage with TRAXCAVATORS. These versatile machines handle every step of Sanitary Fill construction "single-handed"! They dig trenches, they spread and compact refuse, dig cover material, level and grade—leaving no trace of trash or garbage.

Whether you use the trench method or the area fill method of Sanitary Fill, TRAXCAVATORS' all-around adaptability stretches tax dollars and gives you greater returns on your equipment investment.

In addition to doing all your Sanitary Fill work, TRAXCAVATORS can do the many digging, loading, and grading jobs on city streets, playgrounds, parking lots and material stockpiles. Get complete details on TRAXCAVATOR performance from your TRACKSON-"Caterpillar" dealer or write TRACKSON COMPANY, Dept. AC-59, Milwaukee 1, Wisconsin.

TRAXCAVATOR

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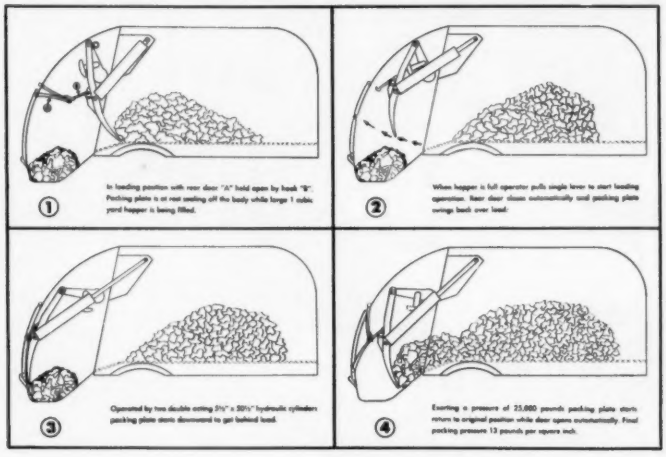
The Original Tractor Excavator

New Refuse Truck Has Simple Loading Operation

The rear platform is a convenience appreciated by the crew members.



Most recent in refuse trucks to hit the municipal market is the Leach Co. Packmaster, being sold by the Elgin Corp., 501 Fifth Ave., New York 17, N. Y.

The new truck body has a capacity of 15 cubic yards and a loading hopper of 1 cubic yard. The loader operation is actuated by a single lever pulled by the operator outside the hopper. A hydraulically controlled loading plate scoops the refuse from the hopper into the body itself. The plate exerts a 25,000-pound pressure against the refuse. During the operation of the loading plate, the access door is automatically closed. When the plate returns to its original position, the door opens.

The refuse hopper is 54 inches wide and 40 inches high. The height of the hopper loading edge is 4½ inches above the truck frame. The 15-yard body is tapered so that the rear is 6 inches narrower than the front to make dumping easier.

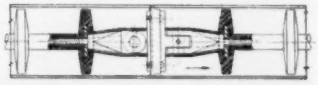
Dumping of the truck body also is simplified. A single lever controls the opening of the tail gate and raises the body to a 45-degree angle. Two hydraulic cylinders raise the tail gate. All cylinders are double acting. A buzzer system is provided at the rear to signal the driver.

Stuart to Show New Lines At AWWA Meeting

Four relatively new products to the water-works field will be shown by the Stuart Corp., 516 N. Charles St., Baltimore 1, Md., at the American Water Works Association annual meeting being held late this month in Chicago.

According to Fred E. Stuart, president, he will introduce an activated bleaching clay coagulant aid; his Walking Beam Floc-alator, now being installed at the Norfolk, Va., water filtration plant; a new type of conveyor; and a self-protecting coating reported to be five times more resistant to air attack than galvanizing. These will be in addition to the Palmer Surface Wash system in operation on a model filter of plexiglas.

The Walking Beam Floc-alator introduces a different method of producing a floc either in water treatment or the chemical precipitation of sewage treatment. The conveyor is known as the Hapman Tubular Cable-Veyor and will be useful in grit-removal chambers in sewage-treatment work. Its Neoprene construction makes it able to handle abrasive material successfully. The Zincilate is the self-protecting grey coating



The standard assembly at the cable splice of the Hapman Tubular Cable-Veyor.

and has rolled up an impressive record for itself in the Naval Air Force by resisting the attack of salt water.

The activated bleaching clay is essentially an acid-processed activated carbon compounded with a highly absorptive bleaching clay. Its use is intended to make more complete the removal of color and turbidity. The average dosage is 40 pounds per million gallons.

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Whatever your airport building requirements, Luria is prepared to meet them from a complete line of *standard* buildings. And remember, while Luria buildings are permanent, heavy steel-frame structures, designed to meet the most exacting building codes, they cost little or no more than light-weight "prefabs" — and up to 50% less than specially-engineered structures! What's more they are available now, ready for prompt delivery. Write today for our new, 20-page catalog on the complete Luria line.

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Throughout the Western Hemisphere, Lock Joint has established its reputation as the pressure pipe of unfailing service.

Lock Joint pressure pipe is supplied in four tested and proved designs, perfected through constant research.

★ REINFORCED CONCRETE PRESSURE PIPE
★ REINFORCED CONCRETE CYLINDER PIPE
★ PRESTRESSED CONCRETE CYLINDER PIPE
★ REINFORCED CONCRETE SUBAQUEOUS PIPE

Whatever your water supply line problem may be, one of these four standard Lock Joint designs is certain to satisfy your requirements and give lasting service.

Made in all standard diameters from 16" to 150", Lock Joint Pressure Pipe is designed for all pressures common to American water works practice.

You are invited to inquire at any of our offices for complete information.

SCOPE OF SERVICES.—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

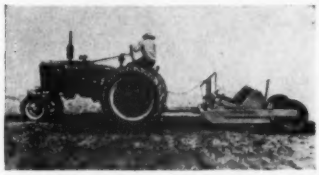
LOCK JOINT PIPE COMPANY
Est. 1905
P. O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kansas

BRANCH OFFICES: Cheyenne, Wyo. • Denver, Colo. Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. Rock Island, Ill. • Wichita, Kan. • Roselle, N. J. Hartford, Conn.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

New Leveland Scraper Adaptable to Tractors



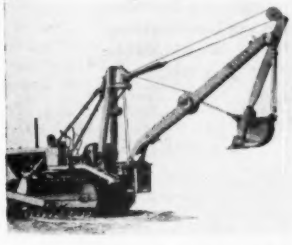
Dumping and spreading the load.

City officials, city engineers, and park superintendents need look no further for an earth scraper that carries soil to any desired spot and spreads it to any desired thickness without dragging. The Leveland Scraper, made by Western Equipment Mfg. Co., P. O. Box 105, Glendale, Calif., carries soil on wheels with less power and greater speed than a drag scraper.

Adaptable to H & M tractors, J. I. Case, VAI, VAO, and other tractors with hydraulic equipment, it has an automatic movable apron that increases scraper capacity and saves tractor power while loading. When operating in a pit the scraper can dump the load over the hopper while the tractor moves forward without stopping. The scraper, equipped with wheels behind the bowl, can be used for building trenches or digging basements. One tractor hydraulic control regulates the Leveland for all loading, carrying, and dumping operations; no extra hydraulic valves are required.

The capacity is a yard and a quarter, and among the jobs it may be used on is airport maintenance, grading and land-leveling, trench digging, snow removal, excavation, road building, housing projects, soil conservation, and reservoir construction.

New Attachment For Hystaway



The Hyster Co., Portland 8, Ore., has added a ½-cubic-yard Hoe Front to the dragline, clamshell, and crane features of the Hystaway, an attachment for use with Caterpillar track-type tractors.

This hoe dipper has a cutting width of 33 inches, or an optional dipper of 23-inch width may be substituted for narrow ditching requirements. Because the center of swing is beyond the crawlers, the hoe can reach deep into the excavation.

President of Leece-Neville

S. Floyd Stewart, executive vice-president of The Leece-Neville Co., Cleveland 14, Ohio, since August 1946, was elected president of the organization by the board of directors recently, it has been announced. He succeeds the late B. M. Leece, who died last December.

S. Floyd Stewart

Mr. Stewart joined the Leece-Neville organization as a research engineer in 1936. A native of St. Louis, he had previously been with General Electric Co., Wagner Electric Corp., Colin B. Kennedy Corp., and Jensen Mfg. Co. He became chief engineer at Leece-Neville in 1941; vice-president in charge of engineering in 1945; and executive vice-president in 1946.

Among Leece-Neville's most recent developments is the rectified AC alternator system, which is adaptable to all types of mobile equipment, and which delivers extremely high current output at all engine speeds, thereby virtually eliminating storage-battery failures.

Cast-Iron Pipe Price Lowered

The United States Pipe and Foundry Co., of Burlington, N. J., has reduced its general selling prices on cast-iron pipe and fittings $7 per net ton.

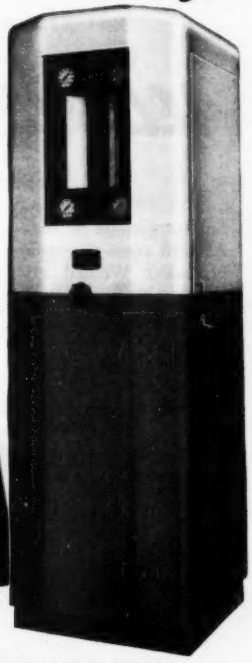
The company is advising all customers affected that this reduction will apply on shipments made to them on and after April 25, 1949.

ANNOUNCING BUILDERS *Chlorinizer*

MODEL CVS

A new unit to meter chlorine gas and produce chlorine water solutions. Accurate, safe, simple—a product of Builders-Providence, Inc., a company that has specialized in equipment for metering and controlling flow for more than 55 years and with whom excellence in design and manufacture has been a tradition since 1820. The Model CVS Chlorinizer has a positive and accurate chlorine rate indicator with direct-reading linear scale for equal ease and accuracy of reading at all rates. It is readily adapted to semi-automatic, program, or automatic proportional operation by the simple addition of attachments to the basic manual unit. Conversion from one method of operation to any other may be made easily in the field if desired. Chlorine rate of flow recorders too, may be furnished as original equipment or attached later.

For Bulletin 840-F1, address Builders-Providence, Inc., (Division of Builders Iron Foundry), Providence 1, R. I.

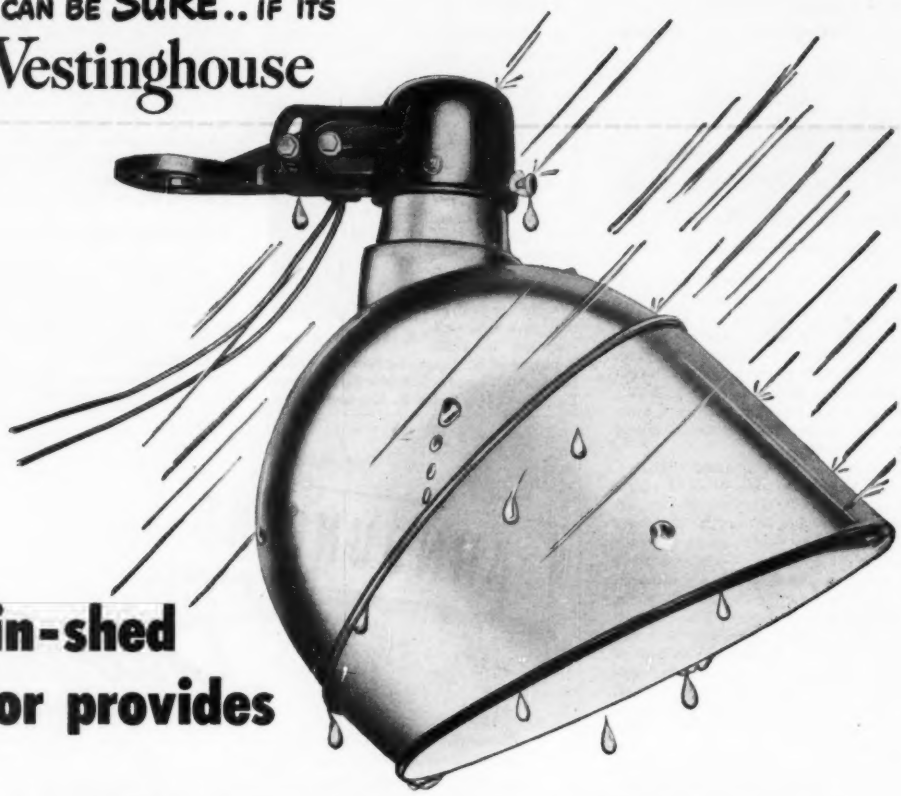


Check these and many other features of Builders Volumetric and Gravimetric Chlorinizers on display at A.W.W.A. Convention — Booths 108 and 109 — Stevens Hotel, Chicago, May 29 — June 3.

BUILDERS PROVIDENCE *Instruments*

YOU CAN BE **SURE**.. IF IT'S

Westinghouse



Rain-shed visor provides

ALL WEATHER PROTECTION

Let it rain, let it snow . . . the Westinghouse AFA-16 open-type sports floodlight is weather-protected. Welded to the reflector, a rain-shed visor efficiently sheds rain and snow without impairing efficiency of the lamp which is snugly recessed deep inside, safe from foul weather—or foul balls. Circular visor provides proper cutoff to eliminate blinding glare and produces a medium or wide beam of high efficiency.

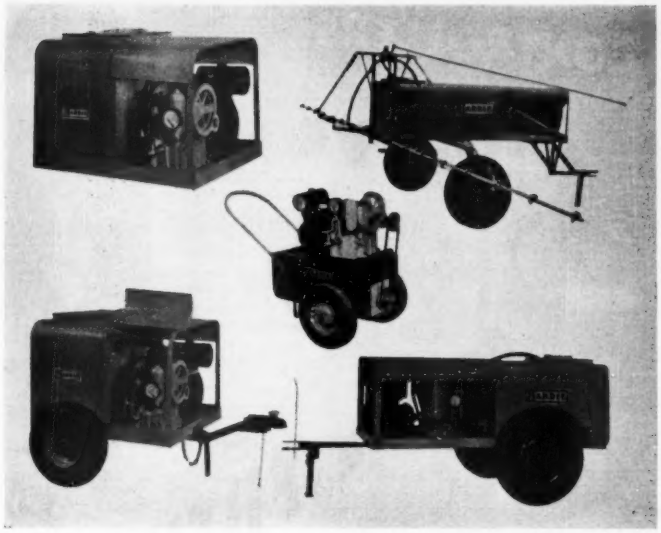
Easy to maintain, the reflector can be detached for routine cleaning without disturbing wiring or spotting adjustment.

Need help in laying out a sportslighting job? Call your local Westinghouse Distributor. Or write for free "Sports Floodlighting Planning Book" B-3911. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-04222

Westinghouse

PLANNED LIGHTING PAYS

High and Low Pressure from Sprayers



Part of the Hardie line.

The current line of sprayers from The Hardie Mfg. Co., Hudson, Mich., show how the industry has met the challenge of providing both high and low pressures, to cope with all types of spraying requirements.

The Hardie line includes both the conventional high-pressure sprayers and airtype sprayers that apply concentrated or dilute sprays at high pressure. Capacities range from 4 gpm at 300 psi to 80 gpm at 1,000 psi. The standard weed boom can be quickly fitted for low-pressure weed spraying, and the sprayers provide connections for hand-gun spraying as well as boom spraying. The Hardie low-pressure manifold, attached to any high-pressure sprayer, converts the sprayer to low pressure, and high- and low-pressure nozzles are interchangeable on the weed boom.

The Toggle and Universal Hinge permit the wings of a sectional spray boom to fold up or down or forward or back with obstructions, and they return automatically to spraying position.

Gar Wood Appoints Distributor

Gar Wood Industries, Inc., Wayne, Mich., has appointed the Peerless Mfg. Corp., 4300 Bluffton Rd., Fort Wayne, Ind., as an authorized distributor of its hydraulic hoists, dump bodies, winches, cranes, and the Load-Packer refuse-collection unit.

W. H. Hammond Promoted

W. H. Hammond has been elected vice-president in charge of sales of the Marion Metal Products Co., Marion, Ohio.

Associated with the automotive dump body and hydraulic hoist industry since 1922, Mr. Hammond held the position of sales manager of a division of Gar Wood Industries, and in 1942 was elected vice-president in charge of sales of all divisions of that company.

In his present position with Marion, he will supervise all domestic and export sales activities. He will be assisted by Harold H. Jacobs.

The "MARK-RITE"
For Efficiency and Safety

More and more municipalities are experiencing the money saving feature of this efficient, portable paint marker. Here's why: Aluminum construction • Gravity feed • No hose or electrical connections • Self-cleaning valves • No straining of paint necessary • Paints lines in 2", 3", or 4" widths • Operates with unskilled labor • Fully guaranteed.

Power models also available
Write for illustrated folder and prices

Universal Mfg. & Sales Co.
8716 S. Santa Fe Ave., South Gate, Calif.
Eastern Factory Branch:
1426 "K" St., N.W., Washington 5, D. C.

CITY OFFICIALS! ***Investigate the New 1-Yard and 1½-Yard***
LEVELAND SCRAPER
ADAPTABLE TO
H & M FARMALL I-4 and I-6 — J. I. CASE "VAI" and "VAO" — ALLIS-CHALMERS — JOHN DEERE and any small Tractor with Hydraulic Pump and Control Valve

Every City Engineer, Park Superintendent, Street Superintendent is looking for the most efficient earth scraper. One which can carry the soil to any desired spot and spread the soil to any desired thickness without dragging. THE LEVELAND SCRAPER will carry the soil on wheels with less power three times faster than drag scraper. *Unexcelled for scraping and leveling streets, parks, playgrounds, cemeteries, and for road and airport maintenance work.*

A LABOR AND TIME SAVER FOR ALL EMERGENCY WORK SUCH AS CLEARING MUD FROM FLOODED AREAS AND STREETS

Write for complete information
Manufactured by
Western Equipment Mfg. Co.
P. O. Box 105 Glendale, Calif.

One Tractor Hydraulic Control Regulates the LEVELAND SCRAPER. NO EXTRA HYDRAULIC VALVES TO BUY!

TRAFFIC CONTROLLERS

Buy with an eye to the FUTURE

Did you know that you can provide today for all future expansion of your traffic control system? Think of it! One Marbelite "foundation installation" now... to meet your immediate needs. Then, whenever you please, simply add one or more MARBELITE jack-connected Dials...

SPECIFY

MARBELITE

MULTI-DIAL

CONTROLLERS

...with the Marbelite Unit-Dial

MARBELITE Unit-Dials are interchangeable

BUY ONE DIAL *Now*

...to meet your present needs. Specify Two-Dial Foundation. Add another Dial later.

BUY ONE OR TWO DIALS *Now*

...to meet your present needs. Specify Three-Dial Foundation. Add one or two Dials later.

THE MARBELITE COMPANY, INC.
27 WARREN STREET, NEW YORK 7, N. Y.

GENTLEMEN:
Please send me complete details of ***Marbelite*** Multi-Dial controllers providing for future expansion.

Name .....
Address .....
City ..... Zone .....
State .....

THE MARBELITE COMPANY, INC. • 27 WARREN STREET • NEW YORK 7, N. Y.

Bete Added To Lawrence Aero-Mist

John U. Bete has joined the staff of The Lawrence Aero-Mist Sprayer Co., 58b Federal St., Greenfield, Mass.

John U. Bete

Mr. Bete, who will be in charge of engineering and developmental work, is the inventor of the Bete fog nozzle, a unique non-clogging nozzle for fire and pest control.

Before joining Lawrence, Mr. Bete maintained his own engineering consulting firm in Cambridge, Mass.

Corrosion-Resistant Plastic Paint Coating

The Poly-Cyclo Products Co., Cleveland, Ohio, has developed a line of corrosion-resistant plastic coatings specifically for sewage-disposal plants in the general maintenance of pipe, storage tanks, chlorinating tanks, and other similar equipment.

CycLon, series NPC, dries quickly to form an adhesive, hard-wearing, flexible glossy coating without the necessity of priming the surface to be coated. It has a high solids content that makes a coating of substantial body and hiding power with a coverage of 350 to 450 square feet of area per gallon per coat when applied by brushing directly from the container. CycLon coatings are unaffected by all alkalies, by their salts, and by most mineral acids; they are inert to alcohols, soaps, water, oxidants, food and fruit acids, oils, aliphatic hydrocarbons, gasoline (low octane), and many other corrosive reagents.

The product will be sold nationally through Munray Products, Inc., 12400 Crossburn Ave., Cleveland 11, Ohio. This is a sales division of Poly-Cyclo.

South Bend

GUTTER-SNIPE

Model "E" Pick-Up Street Sweeper

Sweeps 6 feet wide
Holds 1¼ yards dirt
Turns in 19-ft. circle
Can sweep up a 10% grade
Has three sweeping speeds

We also manufacture SOUTH BEND "Big 6" Street Flushers, Bituminous Distributors, Bituminous Maintenance Units, and Gravity and Pressure Sprinklers.

Municipal Supply Company, South Bend 23, Indiana, U. S. A.

Export Department — 44 Whitehall Street, New York 4, N. Y.

How often are you refilling sweeper broom cores?

AFRICAN BASS FIBRES

INDIAN PALMYRA STALKS

Fresh, high quality fibres make a big difference in sweeper mileage you get between broom core refills. We are able to offer you the best fresh quality fibres in all types and sizes. Your inquiry will receive our prompt attention.

MOUNTAIN HICKORY SPLINTS

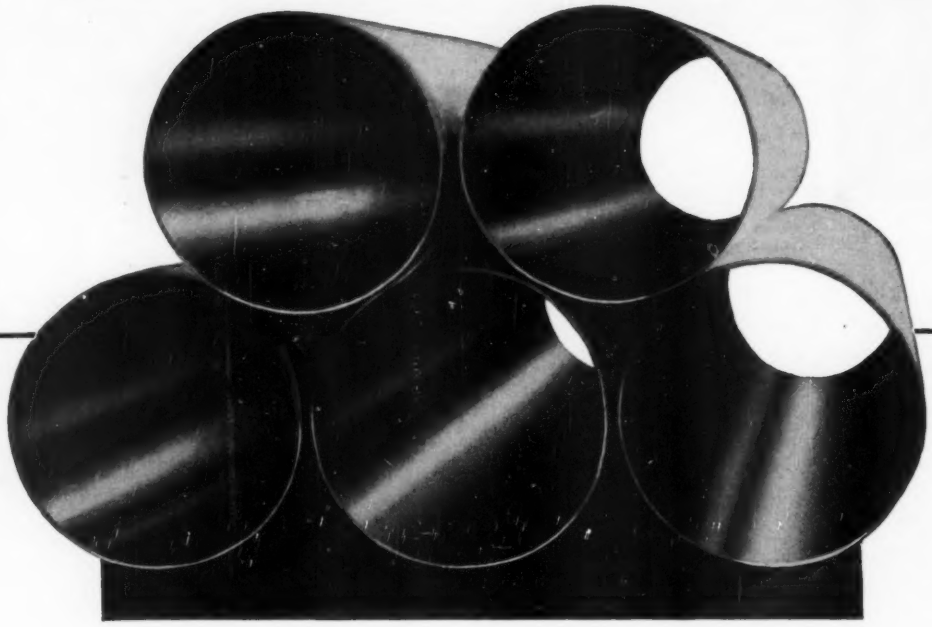
STEELWIRE CHINA SPLIT BAMBOO

The OTTO GERDAU CO.

Established 1872

82 Wall Street, New York 5, N.Y.

Polish with a Purpose



KOPPERS BITUMASTIC* 70-B ENAMEL gives this pipe a glass-smooth, high-gloss interior surface that permits high flow capacity the day it is put into the ground. More important, it assures a flow capacity equally as high after 10, 20, or more years' service.

Flow capacity remains high because Koppers Bitumastic Enamel forms a barrier against corrosion, rust and tuberculation inside the pipe. The exterior coating of Koppers Bitumastic prevents corrosion from soil and other external conditions.

Koppers Bitumastic Enamels keep water from reaching underlying metal surfaces . . . protect against the corrosive action of chemicals . . . have high electrical resistance . . . do not deteriorate with age.

When you specify Koppers Bitumastic 70-B Enamel for your lines, you know you will get long-term, maintenance-free service. Bitumastic Enamels are manufactured from start to finish in Koppers plants . . . Koppers Contract Department furnishes special equipment, competent supervision and skilled workmen for the application job. Submit your problems for recommendations and quotations.

* T. M. Reg. U. S. Pat. Off.

KOPPERS

BITUMASTIC ENAMELS

REG U S PAT OFF

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

G-E's New Smoke-Density Indicator and Control

The smoke-density indicator—one of the component parts of the smoke-density indicator and control.

Designed specifically to indicate smoke-density levels and thus facilitate compliance with smoke-abatement ordinances, the new smoke-density indicator and control manufactured by the General Electric Co., Schenectady 5, N. Y., may also be used to control over-the-fire heated air to the fire-box to reduce excessive smoke while lowering fuel consumption and improving boiler efficiency.

In one unit is contained the light source, a phototube holder, and an enclosure containing the required control and incorporating an indicator calibrated in Ringelmann units.

A magnetic relay is set to operate when smoke density reaches a predetermined level; then a blower forces over-the-fire heated air to the firebox until the smoke density drops. Should the smoke density again rise, the relay is immediately energized. Each time the relay operates an alarm is sounded to warn the boiler operator to adjust the drafts in order to insure more complete fuel combustion.

New Repair Sleeve For Bells, Mechanical Joints

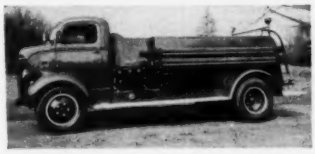
The Dresser Mfg. Div., Bradford, Pa., is making a new sleeve for the repair of broken bell ends of cast-iron pipe, and for the enclosure of leaking mechanical joints. Features of the Bell-Pack are comparatively little weight, complete factory assembly, and increased inside clearance.

Self-Powered Foam Fire-Fighting Unit

The National Aer-O-Foam truck body can be mounted on any chassis to provide all of the equipment necessary to smother fires effectively.

Consisting of a steel body with rear fenders, hand rails, full running board on both sides, back step, rear grab rail, splash apron, and removable floor board, the Aer-O-Foam body has pump-operating panels with lights on both sides. A 500-gpm rotary fire pump is under instant control of the operator as a result of the pressure and vacuum gauges, relief valves accessible on the panel boards, and pump-speed controls mounted on both panels and dashboard.

Aer-O-Foam, the chemical used to smother the fire, forms a tight, long-lasting blanket of foam that may be used not only to put out the fire, but also to insulate threatened areas since it is not dissipated by wind or heat drafts, thus also preventing dangerous flashbacks. It is non-corrosive, will not damage machinery and, when dry, can be washed off floors and walls or brushed off equipment. Usable with either fresh or salt water, the product is not impaired after being frozen and thawed out.



The manufacturer is the National Foam System, Inc., Packard Bldg., Philadelphia 2, Pa.

. . . for DOUBLE SAVINGS

The FORD COPPERHORN

The Ford Copperhorn for vertical lines provides TWO important savings . . . . first in original settings and then, later, whenever changes or replacements are necessary.

At the time of the initial setting, only two pipe fittings are required, one above and one below. These fittings are not disturbed when meters are changed . . . . all that is necessary is a few quick turns of the meter coupling nuts and the job is done.

WRITE FOR CATALOG

Write today for full information and the complete Ford catalog No. 50—FREE.

THE FORD METER BOX COMPANY, INC.

FOR BETTER WATER SERVICES

FORD

Wabash, Indiana

CONTRACTOR FINDS COUPLINGS SOLVE UNDERGROUND OBSTACLE PROBLEM

Here's what the contractor, C. Reppucci and Sons, Inc., Boston, had to say about the new 36" steel water line laid in Somerville, Mass.

"We encountered many underground utilities such as electric and telephone conduits, water, sewer and gas pipes. Dresser Couplings made it possible to join the new line speedily and with a minimum of disturbance to existing underground structures."

Down the main street of a city or out in the country, easier-to-handle steel pipe joined with "flexible-tight" Dresser Couplings pays dividends in increased efficiency in laying and in lower maintenance costs for the life of your line. The flexibility of Dresser Couplings permits you to lay bends with straight pipe lengths. You can duck around, go over or under most underground obstacles without making up costly specials. You save also on swifter job completion. And you cut "Allowable Leakage" to nil, getting the full value of designed capacity.

Take a tip from this contractor, and specify a Dresser-Coupled steel line—for simplicity, for dependability, and for long, trouble-free service. Write today for the new "Report of Steel Water Lines".

Partial list of Cities using Dresser-Coupled steel water lines:

Boston	Mass.
Newark	N. J.
Springfield	Mass.
Cleveland	Ohio
Kansas City	Mo.
Portland	Ore.
Oakland	Calif.
Savannah	Ga.
Jersey City	N. J.
Syracuse	N. Y.
Milwaukee	Wisc.
Philadelphia	Pa.
Albuquerque	N. M.
Chicago	Ill.
Denver	Colo.
Detroit	Mich.
Harrisburg	Pa.
New York	N. Y.

DRESSER "FLEXIBLE-TIGHT" **COUPLINGS**

Dresser Manufacturing Division, 48 Fisher Ave., Bradford, Pa. (One of the Dresser Industries)—In Texas: 1121 Rothwell St., Houston—In Canada: Dresser Mfg. Co., Ltd., 629 Adelaide St., W., Toronto, Ont.—Sales Offices: New York, Chicago, Houston, San Francisco.

Rugged Traffic Paint

A new traffic paint based on two Hercules Powder Company (Wilmington, Del.) chemicals, Pentalyn 802A, a synthetic resin, and Parlon, chlorinated rubber, was striped on a busy highway intersection in South Camden, N. J.

The stripe you can see is a Hercules Pentalyn 802A-Parlon formulation after 2½ months' wear on a South Camden, N. J., pavement.

The photograph shows its excellent condition after 2½ months' service. Cross lines of a specified formulation in current use by the state, were laid down at the same time and were almost worn away, as shown. The test lines were applied to both concrete and asphalt surfaces.

The prime requisites of traffic paints are rapid drying and durability. Fast drying reduces time out while rerouting traffic. Durability means fewer applications per year. Drying speeds of traffic paints based on Parlon and Pentalyn 802A vary from 11 to 20 minutes.

1¼-Cubic-Yard Excavator From Osgood

The newly designed Type 72, 1¼-cubic-yard excavator and material-handling machine manufactured by the Osgood Co., Marion, Ohio, is available in three models: the Model 720—a shovel, dragline, clamshell, crane or hoe with all front-end attachments interchangeable; the Model 725 Mobilcrane; the Model 727 dragline, clamshell or crane.

The 72 has a new type of crawler unit that has each tread belt independently controlled and new hook rollers. Heavy brackets supporting the rollers are mounted at each corner of the deck; further stabilization of the superstructure on the crawlers is obtained through a gudgeon that is part of the crawler-base casting.

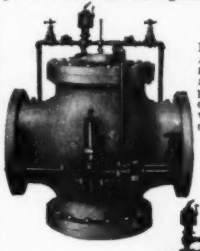
One-man, one-engine operated, the Mobilcrane—mounted on a rubber-tired wheel-mounted chassis—has an independent travel unit that provides one or two speeds forward and reverse, as the customer requires.

The 727 includes special designing for levee and other dragline work, as well as clamshell and crane service.

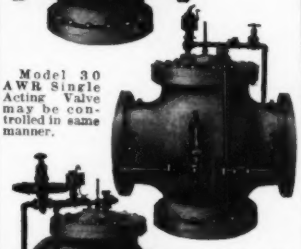
ROSS

AUTOMATIC VALVES

Altitude Valves for tank and reservoir, with two sets of controls—Automatic Hydraulic and Electric Remote Control. Hydraulic pilot normally operates the valve, while electric pilot is used for emergency only.



Model 40-DAWR Double Acting Valve may be operated by electric pilot regardless of elevation of water in tank or reservoir.



Model 30 AWR Single Acting Valve may be controlled in same manner.

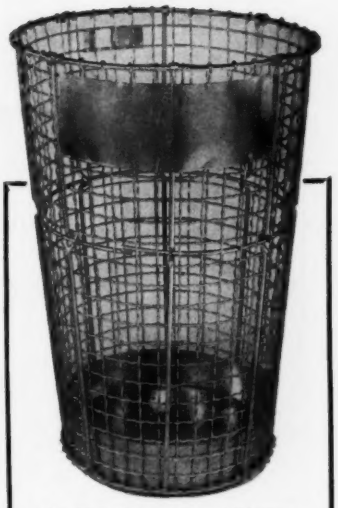
Model 40-AWR Single Acting semi-throttling valve will close on reversal of flow.

Established 1879

ROSS VALVE MFG. CO.

Incorporated

P.O. BOX 596, TROY, N.Y.



No. 83C—34" deep, 22" top, 18" bottom

For litter-free streets and parks—

NORWICH STREET & PARK BASKETS

Citizens take pride in litter-free streets and parks. Two steps are the minimum essentials for attaining this litter-free condition: (1) installation of plenty of easy-to-use waste receptacles, and (2) an educational campaign, conducted with vigor, aiming to induce the thoughtless minority to make use of these waste receptacles.

Norwich Street and Park Baskets are the choice of many cities because they are easy-to-use, inexpensive, and long-wearing.

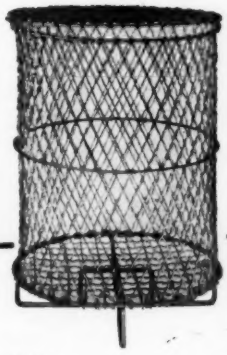
WRITE FOR CIRCULAR

Norwich Wire Works, Inc.

49 Collins Court

NORWICH NEW YORK

No. 62—Rubbish Burner



Bitumuls

REG U S PAT OFF

has pioneered
MANY PRODUCTS
2. **Sand Mix**
with Bitumuls
Emulsified Asphalt

"One-man" pavement construction in California with modern mixers. Note Bitumuls non-stop "refueling" from transport.

Florida builds low cost county roads by blade mixing existing sands with Bitumuls.

An Aleutian transport lands during runway construction. Bitumuls Sand-Mix although only partially cured — supports heavy loads.

LOW COST PAVEMENTS from Native Material

Here was an Army Assignment:

"Build 6 big Airports in the Aleutians — in cold, wet weather — and fast. **No** access roads, and sound aggregate not available."

BITUMULS was the **answer.** It mixed easily with the wet existing sand, and cured in record time — Vital factors in repulsing Jap bombers.

Here was a Navy Assignment:

"Pave 1,700,000 sq. yds. of parking area for carrier planes. No local crushed aggregate available. The cost must be **low.**"

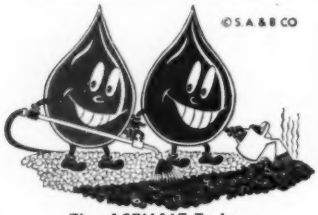
BITUMULS was again the answer. Nine Million Gallons stabilized 350 Acres of local sand—6" Deep. Conventional pavement would have required over **600 trainloads** of imported aggregate—at about three times the cost.

State and County Highway Engineers in the "Sandy" South appreciate the stability and low cost of **BITUMULS SAND MIX PAVEMENT.** In the U. S., there are over 25 million sq. yds. of this type of pavement in use. More is being constructed every year—the reasons:

1—Very Low Cost
2—Use of Existing Road Material
3—Ease of Construction
4—Trouble-Free Maintenance

Ask for our BITUMULS BOOKLETS. They are factual, illustrated, and helpful — a valuable addition to your engineering library.

- Bitumuls Penetration Macadam . . . ☐
- Bitumuls for Maintenance . . . . . ☐
- Bitumuls Sand-Mix . . . . . ☐
- Bitumuls Handbook . . . . . ☐
- Hydropel—Admix for concrete . . . ☐
- Tennis Courts—Laykold & Grasstex . . ☐
- Fibrecoat—roof and metal coating . . ☐



The ASPHALT Twins

Buy Bitumuls & Build Better Pavements

In the West

STANCAL ASPHALT & BITUMULS COMPANY

200 BUSH STREET • SAN FRANCISCO 4, CALIF.

Los Angeles 14, Calif. • Oakland 1, Calif. • Portland 4, Ore. • Tucson, Ariz.

In the East

AMERICAN BITUMULS COMPANY

200 BUSH STREET • SAN FRANCISCO 4, CALIF.

Washington 6, D. C. • Baltimore 26, Md. • Perth Amboy, N. J.
Columbus 15, O. • St. Louis 17, Mo. • Baton Rouge 2, La.
E. Providence 14, R. I. • San Juan 23, Puerto Rico

Modern Traffic Signals

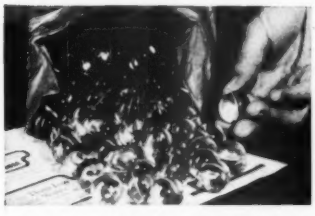
The many municipalities that are studying the flexible possibilities of modern traffic signals, may obtain information about one of the latest traffic controllers by writing for Bulletin MY from The Marbelite Co., Inc., 26 Warren St., New York 7. This controller is expandable up to 12 signal circuits and

All parts are accessible and slow-moving for long life and small maintenance cost.

18 timing intervals. The timer is suitable for interconnected or non-interconnected operation, automatic or manual, and many other combinations. Los Angeles recently purchased 110 of these controllers of the synchronous 6-circuit type to control the 1,650 Marbelite signals purchased within the last six months.

The timer unit is 8 inches high, 8 inches wide and 6½ inches deep. This size permits installation in almost any type of existing cabinet. The unit is readily adaptable as a replacement timer in various interconnected systems as well as for isolated intersections.

Get Rid of Mosquitoes



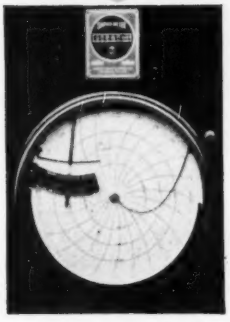
Tossit is a capsule consisting of solvent and surface-active ingredients and dichlorodiphenyl-trichloro-ethane that is tossed into the water—and kills all species of mosquito larvae. As soon as it comes in contact with the water, the capsule disintegrates and the contents shoot across the surface of the water in all directions; the excess material forms in small droplets and may provide residual protection for several weeks. Each Tossit larvacides 1,000 square feet of open, unobstructed water surface.

Tossits are manufactured by the Southern Entomological Co., 2400 Tamarind Ave., West Palm Beach, Fla

SIMPLEX

TYPE MS METER

Meets Highest Standards for Accuracy and Sensitivity!



Note these important features:

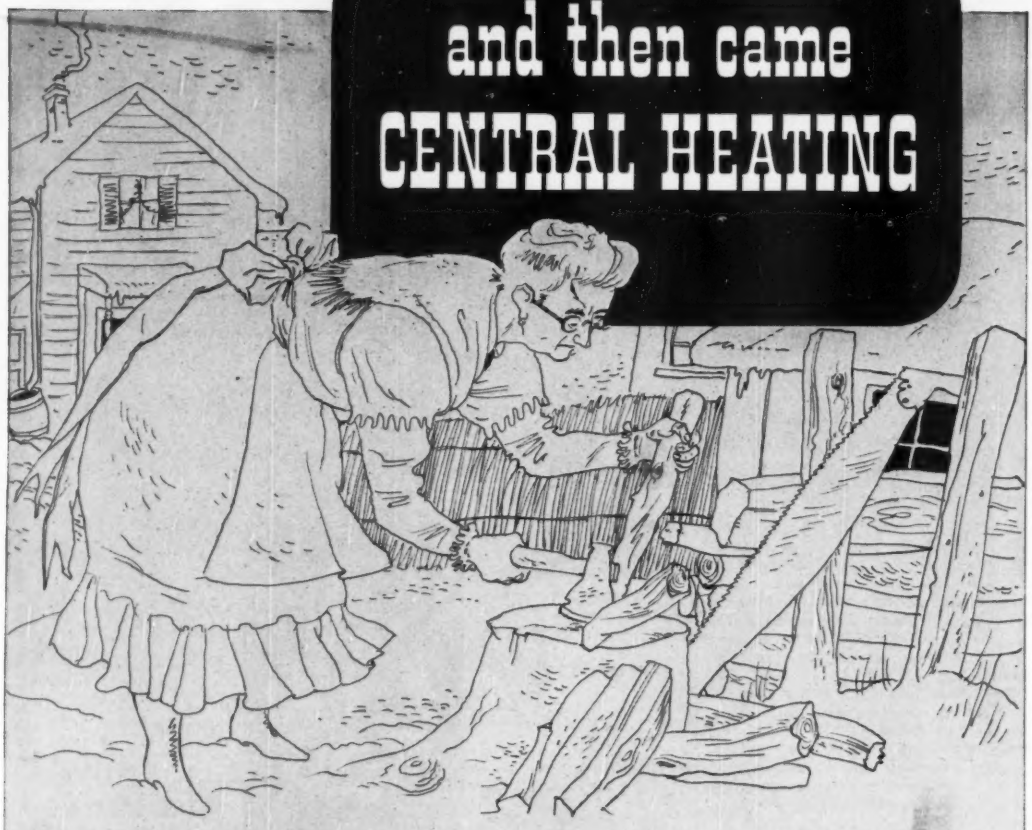
- Bell shaped float translates the half power of the differential into uniform graduations of dial and chart.
- Evenly spaced charts . . . easily read at high as well as low rates.
- Continuous type integrator — eliminates intermittent movement.
- High accuracy of flow readings—over long ranges—10 to 1 or 7.6 to 1.
- Wall panel or floor mounting—electric or spring wound clock optional.
- Rugged construction—simplified design that permits servicing by plant personnel.

Write for full information to

The Simplex Valve & Meter Company, Dept. 5, 6789 Upland Street, Philadelphia 42, Pa.

SIMPLEX

VALVE AND METER COMPANY



When there's a better way of doing things, Americans do it!

AMERICA really had an axe to grind in grandma's day. But because somebody got good and mad and *did* something about it, most of us enjoy the comforts of modern, central heating in our homes today. That's how America progresses—by never being satisfied with inconveniences. Think modern homemakers are satisfied with the annoying inconveniences related to their garbage cans? You're right—they're *not!*

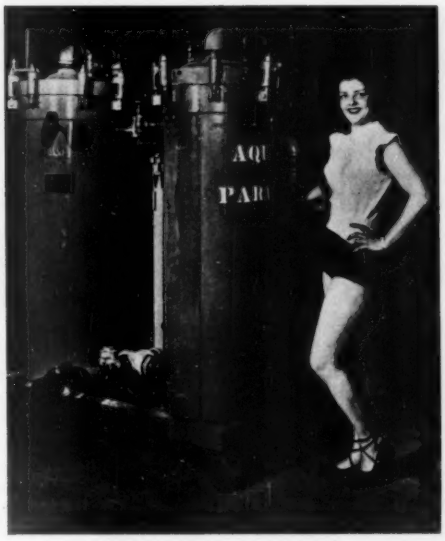
Hotpoint Inc. *(A General Electric Affiliate)* Chicago, Ill.

AND NOW COMES THE
Disposall

City after city endorses the safe, sanitary and efficient method of eliminating diseaseful garbage performed by Hotpoint's Automatic Electric Disposall ®. Modern women want it—public health demands it!

Everybody's Pointing To Hotpoint

Diatomite Filter For Swimming Pools

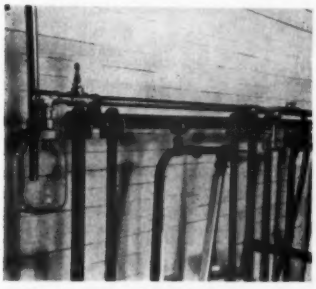


Please **notice the Bowser diatomite filter on the left of Dottie Stewart, ballerina with Buster Crabbe's Aqua Parade of 1949. This Dual Fig. 610-42 filter, equipped with a slurry feeder that reduces the effort, water, and time required for back-washing and precoating in swimming pools, is manufactured by Bowser, Inc., 1396 Creighton Ave., Fort Wayne 2, Ind.**

New Distributors For Alhydro

Alhydro, Inc., 516 N. Charles St., Baltimore 1, Md., manufacturers of the Alhydro Floc Producer, an electronic unit for producing aluminum-hydroxide floc for industrial and municipal water-treatment plants, has appointed the following distributors for the unit: H. D. Fowler Co., Inc., P. O. Box 3084, Ninth Ave., South and Lane Sts., Seattle 14, Wash.; General Filter Co., 923 Second St., Ames, Iowa.

Safer Milk Supply With New Equipment



The "American" Milking System, a development of the American Separator Company of Bainbridge, N. Y., is an important advance in the purification of milk, since its outstanding feature is a substantial reduction in the bacteria count—a reduction of as much as 66 2/3%.

Based on a theory evolved by the New York City Department of Health which found that back-flow of milk into the vacuum system used to power milking machines led to contamination, the new inventions consist of bacteria traps on the vacuum pipelines, a new type of pulsator, and a radical new engineering principle in the head of the milking machine that provides additional traps against bacteria and prevents any milk from tacking up from the air system into the milk pan.

The equipment and method were discussed and demonstrated recently at a forum held in Plainfield, N. J.

WHY PAY SIX TIMES MORE FOR YOUR BREAKING?

The MIGHTY MIDGET

A utility machine with merit, power, speed and economy. Increases output of your compressor. Cuts concrete and tamps backfill at a rapid pace. Cuts cost to a minimum. Entirely air powered. Cuts concrete the easy way!

Write for information to Department "D"

R.P.B. CORPORATION
2751 EAST 11th STREET • LOS ANGELES, CALIFORNIA

Fast, Low Cost Clean-Up and Snow Removal . . .

LITTLE GIANT POWER SWEEPERS

Both tow-type and mounted front-end sweepers. For trucks, tractors and Jeeps. Operates from power take-off—wheel slippage cannot slow down the broom. ONE-MAN operation—no operating engineer required on the broom. Tested and proved—hundreds in use.

SNOW and BULLDOZER BLADE. Replaces brush—quickly attached.
SPRINKLER ATTACHMENT. Holds down the dust—sprinkles just ahead of the broom.
WRITE, stating make and model of truck, tractor or Jeep.

LITTLE GIANT PROD., INC.
1585 N. Adams St., Peoria, Ill.

Sheriff Carl Enloe puts in a call from his car to his office in Golden, Colorado. All vehicles of this Sheriff's Patrol are equipped with G-E radio for efficient communication in any weather, at any altitude in the area.

● In the Colorado mountains police work is made tougher by problems of terrain and weather. Roads that begin deep down in canyons often climb high above the timberline—thousands of feet up. Communication has always been complicated by high winds, sudden storms, and extraordinary variations in altitude.

For these reasons, the Sheriff's Patrol of Jefferson County now depends on General Electric radio communication. This law enforcement organization, like so many others, finds G-E equipment safe, sure, dependable. Above all, G.E. licks the "dead spots" that are a constant headache to users of 2-way radio in this rough country.

All the facilities of Electronics Park—greatest electronics center in the world—are behind the radio communication representative in the General Electric office nearest you. Call him when you have a problem in communication.

Before You Select Any Radio Equipment,

Get This Bulletin FREE!

Write: *General Electric Company, Box 1122, Electronics Park, Syracuse, New York.*

You, too, can put your confidence in—

GENERAL ELECTRIC

New Assistant Vice-President For Rockwell

C. S. Bygate has been appointed assistant vice-president of the Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa.

C. S. Bygate

Mr. Bygate, a graduate of Franklin and Marshall College, and employed by the Stone & Webster Engineering Corp. before joining Rockwell in 1943, started in Rockwell's Pittsburgh Equitable Meter Division and was later transferred to General Purchasing. His duties there were concerned with the purchasing done by the parent company's 17 divisions and subsidiaries.

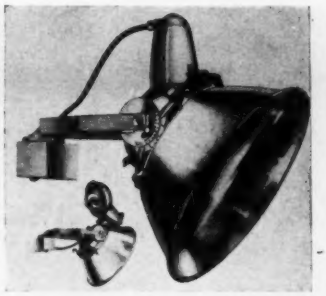
Pipe Cutter Replaces the Saw

The H. D. Fowler Co., 901 Lane St., P. O. Box 3084, Seattle 14, Wash., has placed on the market an asbestos-cement pipe cutter for Century and Transite pipe. Cutting by means of an abrasive-resistant blade, the Spring Load a.c. pipe cutter is operated by one man and may be obtained for 3-, 4-, 6-, and 8-inch pipe; one model handles all these diameters. For larger diameters, the tools can be quickly enlarged with parts nominally priced.

Long-Range Floodlighting For Sports Events, Airfields

For such sports lighting as municipal baseball and football fields and golf-driving ranges, and for airport and large-yard lighting, the Revere Electric Mfg. Co., 6015 Broadway, Chicago 40, Ill., has developed the "2000" line of floodlights.

These 20-inch, 18- and 50-degree floodlights are constructed with the reflector housing consisting of two 14-gauge No. 2S0 aluminum spinnings hinged together by means of a cast ring and clamped tight by heavy stainless-steel spring latches. The hinge is designed to hold the rear reflector open while servicing. There are no chains or loose sections to dangle in the wind and perhaps cause reflector damage or lamp breakage. The lens is impact-resisting and is sealed into the reflector with a non-hardening cement to provide a permanent water-tight seal. Rear and front sights provide a means of aligning the lamp filament in the axis of the two reflectors so that accurate aiming of illumination may be obtained. For bringing the floodlight back to its exact position after servicing, a vertical indicator is provided together with a rotation stop adjustment. A hot-



galvanized yoke mounts on an indexed casting to give positive horizontal positioning.

For normal or standby service—

PITTCHLOR

EASY TO USE, EFFECTIVE CHLORINE AGENT

Pittchlor, containing 70% available chlorine, is excellent for all types of water treatment. Use as the sole agent in supplies up to 500,000 gallons daily . . . and as a valuable auxiliary in larger installations.

A high-test calcium hypochlorite containing 70% available chlorine. Granular, free-flowing, non-caking. Packed in 5 lb. cans (9 per case), 3¼ lb. cans (12 per case) and 130 lb. drums.

1. ECONOMICAL TO USE—Pittchlor, which performs the same chlorinating action as liquid chlorine, may be applied manually or through simple mechanical feeders.

2. EXCELLENT FOR EMERGENCIES—Pittchlor's high stability and ease of use makes it very desirable for emergency uses: in floods, fires, droughts, or whenever permanent chlorination installations are rendered partially or totally ineffective.

Ask your dealer for Pittchlor. For free descriptive literature write: Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth at Bellefield, Pittsburgh 13, Pa.

COLUMBIA CHEMICALS

CHICAGO • BOSTON • ST. LOUIS • PITTSBURGH • NEW YORK
CINCINNATI • CLEVELAND • PHILADELPHIA • MINNEAPOLIS
CHARLOTTE • SAN FRANCISCO

PAINT • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

BEAUTY
EFFICIENCY
ECONOMY

FOR MUNICIPAL WATER STORAGE REQUIREMENTS

PITTSBURGH • DES MOINES

Elevated Steel Tanks

Match your specific water storage need with the right Pittsburgh-Des Moines Elevated Steel Tank! We will be happy to consult with you at any time, without obligation . . . meanwhile, write today for our comprehensive new Catalog: *informative, clear, complete!*

PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH	3412 Neville Island	DES MOINES	913 Tuttle Street
NEW YORK	Room 915, 270 Broadway	DALLAS	1217 Praetorian Bldg.
CHICAGO	1216 First National Bank Bldg.	SEATTLE	920 Lane Street
SANTA CLARA, CAL.	619 Alviso Road		

Michel-Cather Celebrates 40 Years in Business

Michel-Cather, Inc., 2 Park Ave., New York 16, N. Y., one of the first advertising agencies to specialize in engineering and industrial accounts, is celebrating its 40th anniversary.

A. Eugene Michel, an engineer, established the organization on April 13, 1909. In 1939 he died, leaving the business to the present president of the agency, Edgar F. Cohen.

William A. Cather is executive vice-president.

Chemical Compound Destroys Brush

The Agricultural Chemicals Div. of The Sherwin-Williams Co., 101 Prospect Ave., Cleveland, Ohio, has developed a chemical compound combining 2,4-D and 2,4,5-T for brush control. By means of Sherwilkil, an alkyl ester, brush consisting of poison ivy, poison oak, poison sumac and nearly 60 other types of woody plants can be eliminated without heavy and repeated re-growth problems.

Sherwilkil requires a program of a thorough initial spraying, followed by one treatment a year for one to three years thereafter.

Evergreens Require Spring Cleaning

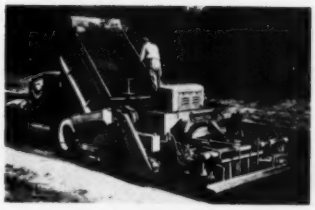
According to the Davey Tree Expert Co., Kent, Ohio, an important precaution in the maintenance of healthy evergreen trees is soot removal with a strong spray from a garden hose. Even in neighborhoods not populated by smoke-belching chimneys, a light accumulation of dust and dirt on the leaves interferes with the tree's transpiration (breathing) and photosynthesis (conversion of unrefined elements into usable plant foods by the trees).

It is recommended that the water be sprayed close to the tree with the spray going from bottom to top angled up, and from top to bottom angled down if possible.

Bituminous Paver Lays to 12½ Feet

The BP-5 bituminous paver manufactured by The Jaeger Machine Co., Columbus 16, Ohio, lays any width of paving between 5 feet 8 inches and 12½ feet without removal or insertion of any parts and can, therefore, lay a 25-foot pavement in two lanes without special attachments. An hydraulic device automatically matches the level of the course being laid, with the adjacent course, curb, or gutter maintaining exactly correct thickness for final compaction by the roller.

The machine can pave flush to curb-



sealed joints between adjacent lanes. A mat thickness up to 6 inches may be obtained. The hopper's capacity is 6 tons, and the screeds are heated by hot air, making them burn-proof. Eight working speeds are available to the operator, ranging from 5 to 50 fpm with road speeds varying from .6 to 2.0 mph. Power is from a 6-cylinder, radiator-cooled gasoline engine of 37.5 hp at 1,600 rpm, with throttle and governor control.

Universal Concrete Pipe Plant Triples Production Capacity

Production capacity of the Universal Concrete Pipe Co., 297 S. High St., Columbus 15, Ohio, has been tripled at its Decatur, Ala., plant as a result of the recently completed $50,000 expansion program. George D. Sims is plant manager.

CLEAN PIPE WITH "FLEXIBLE" TOOLS - - -

PICK THE MOST SUITABLE TIME — SAVE MONEY TO BOOT

Don't dig 'em up—clean 'em. It costs less! Rent the tools—buy 'em or contract the work. Fit the job to your budget, and invest the savings in other forward-looking projects.

"FLEXIBLE" tools have shown their practical value in over 15 years of pipe cleaning work. During that time, millions of feet of pipe have been cleaned, under all conditions. That's why, today, we offer this equipment confidently—for sale, lease, or contract. Designed by specialists—proven in the field—"Flexible" tools *will clean your lines in shorter time and at lower costs.* Proof is available. Ask for it.

Standard Pressure Line Scrapers from 6" to 36"

"FLEXIBLE" TOOLS FOR SALE, LEASE OR CONTRACT

Write for Illustrated Literature Today.

REMEMBER, ECONOMY STARTS WHERE PROVEN METHODS ARE USED

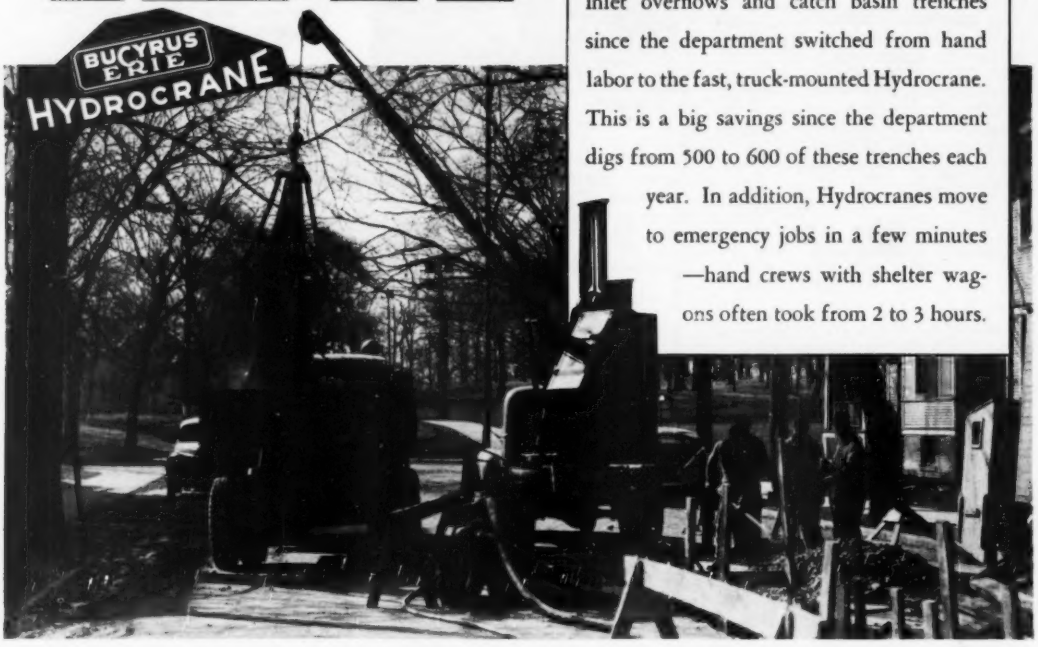
FLEXIBLE UNDERGROUND PIPE CLEANING CO.

9059 Venice Blvd., Los Angeles 34, California

141 W. Jackson Blvd. Chicago, Ill.	101 Broadway New York 13	147 Hillside Ter. Irvington, N. J.	2011 Central Ave. Memphis, Tenn.
801 E. Excelsior Blvd. Hopkins, Minn.	29 Cordan Ave. Roslindale 31, Mass.	P. O. Box 447 Lancaster, Texas	P. O. Box 165 Atlanta
41 Greenway St. Hamden, Conn.	909 N. Homewood Ave. Pittsburgh 8, Pa.	4455 S.E. 24th Ave. Portland 2, Ore.	3786 Durango Ave. Los Angeles 34, Calif.

Milwaukee Sewer Department Cuts Trenching Costs 30%

Milwaukee Sewer Department records show a reduction of 30% in cost of digging storm inlet overflows and catch basin trenches since the department switched from hand labor to the fast, truck-mounted Hydrocrane. This is a big savings since the department digs from 500 to 600 of these trenches each year. In addition, Hydrocranes move to emergency jobs in a few minutes —hand crews with shelter wagons often took from 2 to 3 hours.



The Bucyrus-Erie Hydrocrane handles many jobs no other crane can touch — travels up to 50 m.p.h. on the open road . . . works in close quarters . . . simple to operate, hand levers only . . . precision control for close work. Two models — 1/4 yd. 2-ton H-2 and 3/8 yd. 3-ton H-3. Send for complete information today.

Equipped with a special hydraulic catch basin bucket, this Hydrocrane makes quick work of cleaning clogged catch basins.

Here are some of the jobs handled by the fully hydraulic Hydrocrane:

With a hydraulic bucket it . . .

- Digs storm inlet overflows and catch basin trenches.
- Digs lengths of trenches for sewers that have broken down.
- Loads dirt into trailers.
- Back-fills crushed stone around pipe.
- Handles clean-up work.

With a hook and chain it . . .

- Sets sewer pipe.
- Places valve and pipe fittings on water mains.

BUCYRUS ERIE

HYDROCRANE DIVISION SOUTH MILWAUKEE, WIS.

37H49

BUCYRUS-ERIE HYDROCRANE DIVISION, South Milwaukee, Wisconsin

Gentlemen: I want the full story on the Hydrocrane.

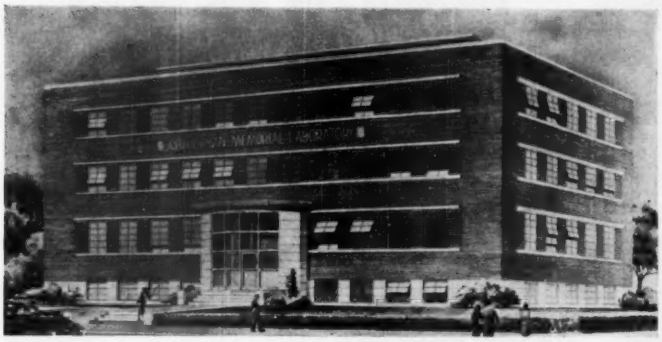
Name.....

Dept. or Company.....

Address.....

City.....(.....) State.....

Mine Safety Appliances To Build New Laboratory



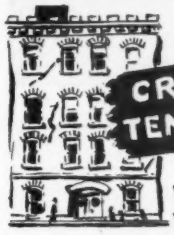
An architect's sketch of the new research laboratory to be built in Pittsburgh by the Mine Safety Appliances Co. The new laboratory will be devoted exclusively to the development of safety equipment for mines, industry, and public service organizations. Completion is scheduled for September 1949.

Altimeter Protection

To provide a more durable surveying instrument, Wallace & Tiernan Products, Inc., Belleville 9, N. J., has shockproofed its W&T Sensitive Altimeter in a metal case and provided a leather carrying case with shoulder strap for further protection. There is a means of sealing the instrument to protect it during storage or in transit, and an armored thermometer is supplied.

Watertight Joint Sealing

Pre-molded Para-Plastic rubberized asphalt, developed by the Servicised Products Corp., Chicago, Ill., offers an effective solution to the problem of watertight sealing of vertical and overhead concrete joints, effectively sealing joints and maintaining bond with concrete at zero temperature. The sealing strip can be nailed directly to the concrete form.



CROWDED TENEMENTS

—or well-lit play spots?

What Are You Doing For Youth in Your Town?

There's no better way to solve the problem of vandalism and youthful delinquency than to provide adequate play spots . . . particularly for nighttime recreation. REVERE experts have helped cities, towns and villages in their planning. We'll be glad to help you!

New 19° and 50° Flood for long range lighting. Easy to wire, install and maintain.

Revere ELECTRIC MFG. CO. CHICAGO, ILL. FLOODLIGHTS

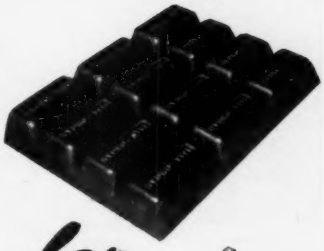
For Parks, Playgrounds, etc.

Write for our catalog showing practical layouts for athletic fields and other recreational areas. It's a guide every recreational director should have!

REVERE ELECTRIC MFG. CO.

6015 Broadway — Chicago 40, Illinois

A NEW Package—



for HYDRO-TITE

1 Twelve 2-lb. packages in a sheet easily broken apart like the sections of a chocolate bar.

2 Packed two sheets in a sturdy 50-lb. carton for ease in shipping, handling and storing.

3 Pigs are just the right size for the pot.

Hydro-Tite still available in 100-lb. waterproof bags for those who prefer powder form.

All Hydro-Tite is protected with an approved germicide for hazardous soil conditions.

Send for literature.

A DEPENDABLE JOINTING COMPOUND — FOR BELL AND SPIGOT WATER MAINS

HYDRO-TITE

HYDRAULIC DEVELOPMENT CORP.

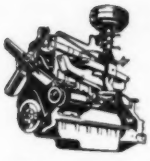
MAIN SALES OFFICE • General offices and works

50 CHURCH ST. N.Y.C. • W. Medford Sta. Boston, Mass.

BIG BUY

of the Medium Duty Field

BIG "Army Workhorse" Engine

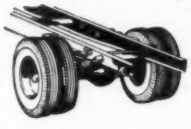


the same famous GMC "270" that performed so dependably and economically in nearly 600,000 military GMCs . . . with such quality features as Full-Pressure Lubrication, Tocco-Hardened Crankshafts, Airplane-type Main Bearings.

BIG Roomy Comfortable Cab

eight inches wider and seven inches longer than prewar, all steel-welded with 22 per cent greater vision, seats with double the number of springs, automatic built-in ventilation system, complete insulation and soundproofing.

BIG Husky Frame and Chassis



with heavy duty frame of 10.1 section modulus . . . big husky axles, clutch, transmission, brakes and springs. Built to handle gross vehicle weights up to 21,500 pounds and truck and trailer weights up to 37,000 pounds.

Built by the Biggest Exclusive Producer of Commercial Vehicles

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

Buffalo Meter Adds to Staff

William G. Carter has joined the sales staff of the Buffalo Meter Co., 2902 Main St., Buffalo 14, N. Y., as assistant to Herbert F. Barrett, general sales manager and assistant secretary.

Wm. G. Carter

Formerly with the industrial purchasing department of the National Gypsom Co., Mr. Carter will now concentrate on the development of up-state New York markets and national correspondence regarding the industrial meter sales, with special emphasis on the new stainless-steel meters for the measurement of corrosive liquids.

Mow Large Areas Efficiently

The Toro Park Patrol is of particular value in mowing areas where it is necessary to lift the mowers over curb stones or driveways.

The mowers or the sickle, an optional piece of equipment, are raised or lowered by an hydraulic-control lever. The Toro Bullet tractor has a shortened rear platform, giving it a turning radius of 6 feet 9 inches and a radius from center of the circle to the swath of 6 feet 2 inches. The speed ranges from 3.16 to 20.2 mph forward and 2.59 mph reverse. The swath is 84 inches. The mowers may be removed quickly to make the Park Patrol tractor available for general utility work.

Toro Mfg. Corp., Minneapolis 6, Minn., is the manufacturer.

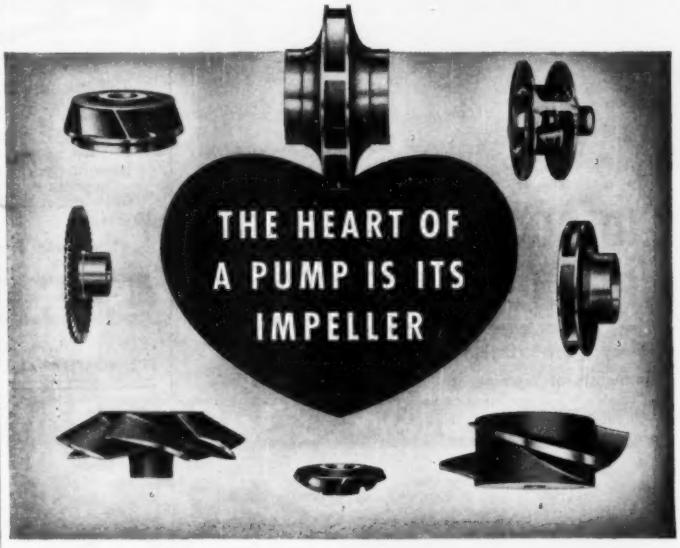
Utility Cart Doubles as Incinerator

Designed to expedite the removal and disposal of burnable refuse from parks, playground areas, school premises, and beaches, County Specialties, Inc., P. O. Box 626, Port Chester, N. Y., offers the Westchester Utility and Burning cart. With it, one man gathers leaves, brush, grass cuttings, and papers and drops them into the cart where they are immediately burned to ashes on the spot. An ash-catcher below the burning refuse protects grass, and the ashes can be discarded or used to nourish the flower beds and lawns. Thus year-round cleanup work that generally involves collecting, loading into trucks, trucking, dumping, and then burning can now be accomplished by one man who burns the rubbish as he collects it.

The cart is welded steel throughout, and where subjected to the severest heat, extra-heavy expanded metal mesh is used. Hamper capacity is 18 cubic feet, many times that of a wheelbarrow. Wheel treads are 2½ inches wide to prevent sinking into turf or sand, and the over-all length is 6 feet. A height of only 3 feet 4 inches makes it handy for even a short person's use.

This portable incinerator requires practically no maintenance and sells for $69.50 f.o.b. Yonkers, N. Y. It is shipped uncrated by Railway Express, this transportation charge for the account of the purchaser.

The collected trash is burned.



Peerless Pumps utilize many different impeller designs to meet various fluid conditions

What makes a pump "tick?" Its heart is an impeller!

Pictured above are eight Peerless impeller designs for varying fluid conditions. No. 1 forces water upward from deep wells. No. 2 is a double suction design for high capacity horizontal pumps. No. 3 pumps solids in suspension. No. 4 handles all liquids in small capacities, at high heads. No. 5 is of single suction design for process services. No. 6 combines both radial and axial flow. No. 7 is a semi-open impeller for small diameter deep wells. No. 8 is an impeller that "propels" large liquid volumes.

The point is—capacities, lifts, heads, temperatures, chemical analysis, clarity, shaft speeds are seldom common to different pump services and installations. Because fluid conditions vary, Peerless pump designers are versatile and Peerless pumps utilize this versatility in different impellers for varying fluid conditions, successfully pumping most liquids in all industries.

Plan with Peerless for all your needs for pumps. Select the pump you require from the comprehensive Peerless line of both horizontal and vertical type pumps. Individual descriptive bulletins are available on the type of pump you require. Request your copies today.

Peerless
VERTICAL AND HORIZONTAL
Pumps

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
Los Angeles 31, California Indianapolis, Indiana
District Offices: New York 5, 37 Wall Street; Chicago 40, 4554 North Broadway; *Atlanta Office:* Rutland Building, Decatur, Georgia; Omaha, Nebraska, 4330 Leavenworth St.; Dallas 1, Texas; Fresno, Calif.; Los Angeles 31, Calif.

END COSTLY DELAYS IN PIPELINE CONSTRUCTION

KA-MO Earth Boring Equipment reduces delays and costs of pipeline and conduit construction, by rapidly *tunneling under* Highways, Streets, Railways, Parkways, Sidewalks and Lawns.

The illustration shows a KA-MO 24" Diameter Drill, but Drills are available in sizes from 3" to 26" in diameter. Drills come in attachable sections, are available in 4' or longer lengths. Additional lengths of drill (as shown at top of illustration) are quickly hooked up and the digging promptly continued.

In soft or loose earth, holes are drilled through a caisson which is pulled along as drilling progresses. The caisson prevents earth from caving into the hole, leaves the dirt above the caisson as firm as before.

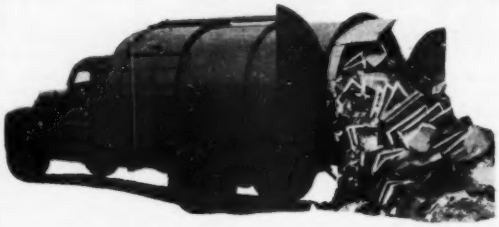
KA-MO Drills have been used for digging holes totaling millions of feet—horizontal, vertical and oblique holes in all kinds of earth.

Investigate this way of preventing construction delays and cutting down costs.

KA-MO TOOLS, INC.
2121 S. Troy Street • Chicago 23, Illinois

USERS REPORT:

One Pak-Mor Garbage Unit Will Replace Three or Four Ordinary Open-Type Trucks



The Pak-Mor Garbage Collection Unit makes tremendous savings in sanitation department costs because the Pak-Mor unit's gigantic packer-plate actually COMPRESSES the garbage as it is collected. The normal 10-yard body is capable of carrying almost 20 yards of loose, unpacked garbage. Affords savings in man-hours —in mileage dollars. The patented Pak-Mor unit is the outstanding garbage collection unit on the market today.

Write today for descriptive folder!

PAK-MOR MFG. CO.
Division of Alamo Welding and Boiler Works
812 NORTH FLORES SAN ANTONIO, TEXAS

THE X-RAY FOR PUBLIC WATER SYSTEMS

A PITOMETER SURVEY

is an Audit of the Entire Water Distribution System

A completely objective check-up to determine its present efficiency and ability to handle future demands—this is the highly specialized type of service on which Pitometer Engineers concentrate.

Fifty-two years of this unique service to water systems throughout the United States, Canada, Central and South America have given Pitometer Surveys a reputation for unfailing ability to conserve available supply, decrease operating costs and increase revenue.

The Pitometer Company
Water Distribution Engineers
50 Church St. New York 7, N. Y.

High-Speed Trenching Machine

High performance and versatility of action are characteristics built into the new Badger trenching machine, according to the Badger Machine Co., Winona, Minn. Model 302-T, a rubber-tired, eight-wheel trencher, appears well suited for the needs of municipalities in this type of work.

The Badger machine has a digging range of 8 to 16 inches in width and 6½ feet in depth. By using extra equipment, 24-inch width and 10½-foot depths are possible. Digging speed is, of course, dependent on soil conditions, but records of 300 feet per hour at a depth of 4 feet are not unusual. The Model 302-T can travel on the road at a rate of 20 miles per hour.

While appearing light, the excavator capitalizes on a principle differing from heavier machines to keep excess weights down and still retain high efficiencies. The principle is one of shearing the soil with small cuts at a righ rate of speed. The machine will handle rock with the same results obtained by other machinery. Stones whose diameter equals the width of the shovel are usually carried out. Larger rocks or rock seams will force the shovels upward, and when the seam has been passed, the shovels will return to the previous depth. The shovels will dig into hardpan. The action has a scarifying effect which penetrates the hard surface.

The machine has special equipment making it easy to hold to a determined

How the Badger Model 302-T looks in the traveling position.

The excavator cut this trim trench when excavating for a sewer in a small Illinois community. Note that it went through bituminous surface and into hardpan.

sight and grade. It can hold to an established grade within a small fraction of an inch. The structure is designed so that the machine can work handily under trees or other obstructions without damage.

Cla-Val Opens New Chicago Office

The Cla-Val Co., P. O. Box 949, 1600 Orange St., Alhambra, Calif., has opened its new branch office and warehouse at 1500 South Western Ave., Chicago 8, Ill., under the supervision of E. J. Baker and his assistant, Allister Bender.

PREMAX

A Favorite Everywhere!

DELUXE

House Numbers

One of the most attractive low-cost house numbers you can find—the Premax Deluxe. Has jet black background plaque with satin-silver figure that will catch the light and always be clear and legible. Standard in countless cities.

Get the new report on Modern House Numbering. It's yours for the asking!

PREMAX PRODUCTS
DIVISION CHISHOLM-RYDER CO., INC.
4946 Highland Ave., Niagara Falls, N. Y.

LESS SPADE WORK *with the*

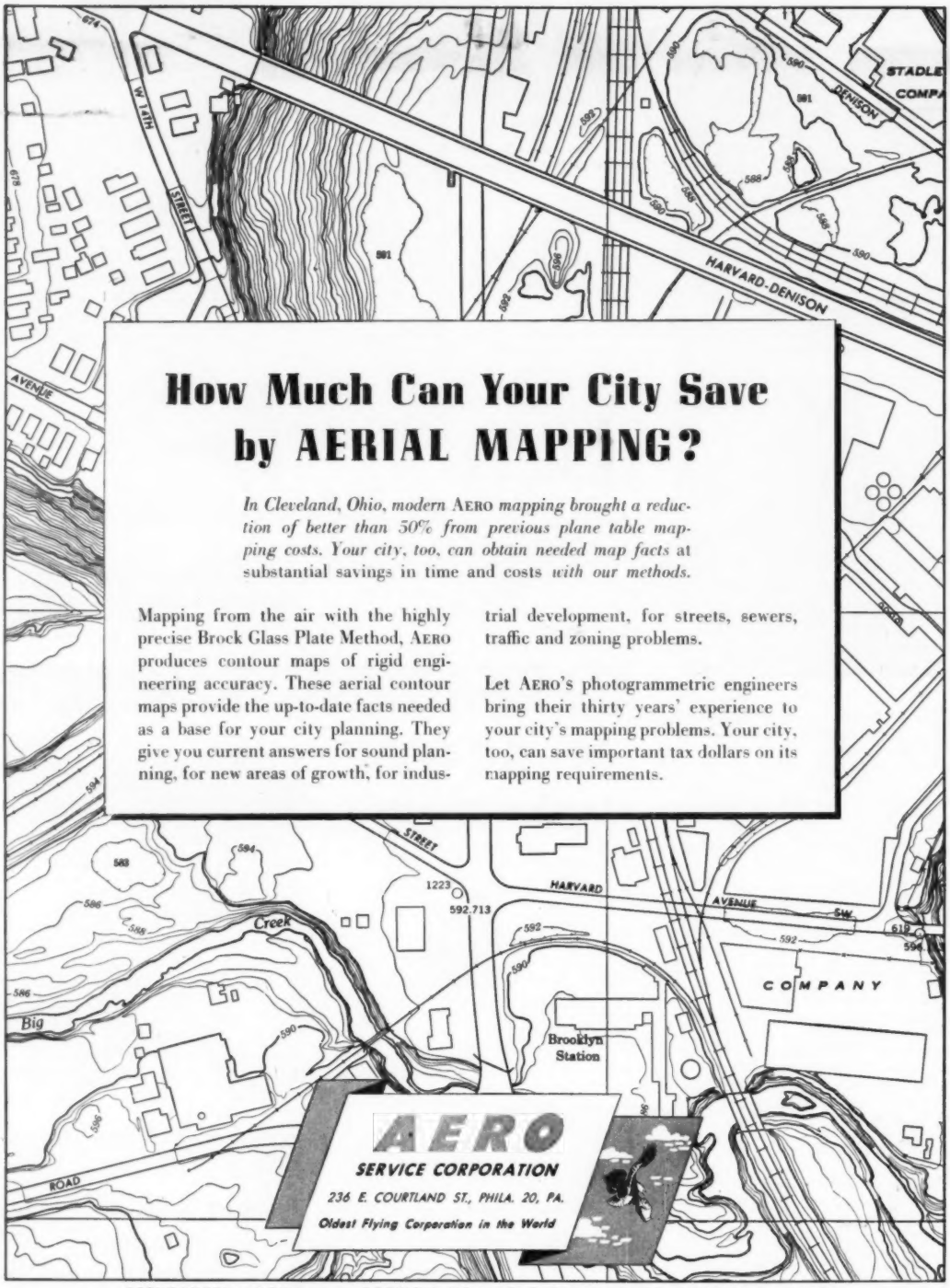
M-SCOPE leak detector

The M-SCOPE leak detector shows exactly where to dig.

Saves money — mess — and trouble!

REMEMBER—an undetected leak is an unmetered user!

Write for Booklet



How Much Can Your City Save by AERIAL MAPPING?

In Cleveland, Ohio, modern AERO *mapping brought a reduction of better than 50% from previous plane table mapping costs. Your city, too, can obtain needed map facts* at substantial savings in time and costs *with our methods.*

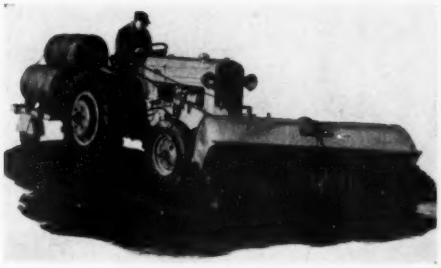
Mapping from the air with the highly precise Brock Glass Plate Method, AERO produces contour maps of rigid engineering accuracy. These aerial contour maps provide the up-to-date facts needed as a base for your city planning. They give you current answers for sound planning, for new areas of growth, for industrial development, for streets, sewers, traffic and zoning problems.

Let AERO's photogrammetric engineers bring their thirty years' experience to your city's mapping problems. Your city, too, can save important tax dollars on its mapping requirements.

AERO
SERVICE CORPORATION
236 E. COURTLAND ST., PHILA. 20, PA.
Oldest Flying Corporation in the World

REPRODUCED ABOVE IS A PORTION OF MAP SHEET P-16 OF CLEVELAND, OHIO

Tractor Sweeper For Large And Small Areas



The Little Giant sweeper requires only about one hour and one man to attach or detach it from its Oliver, Ford-Ferguson, or Ford Industrial tractor.

Equipped with twin hoods separated by 4 inches of air space through which dust and dirt course downward to the ground rather than straight back into the motor, the Little Giant is light in weight, with the gear housing and other parts made of aluminum. It has front-end power take-off, permitting the use of the rear power take-off for operating other equipment together with the sweeper. Furnished in 5-, 6-, and 7-foot brush lengths, the sweeper is designed so that the 32-inch-diameter brush can be placed at various pressures through an adjustment of the spring tension—the advantage of this is that the pressure can be varied according to the surface and the life-span expanded.

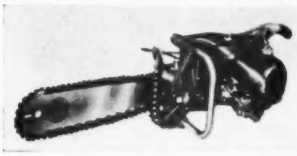
Among the duties performed by the sweeper, manufactured by Little Giant Products, Inc., 1585 N. Adams St., Peoria 3, Ill., are snow sweeping, dust laying and sweeping, and street and highway cleaning preparatory to the application of resurfacing materials to assure smooth paving by reducing bubbles and blisters.

Snell Receives Award

Foster Dee Snell, president of Foster D. Snell, Inc., 29 West 15th St., New York 11, N. Y., consulting chemists and engineers, has been awarded the Gold Medal for 1949 by the Society of Chemical Industry.

Dr. Snell will receive the medal at the Society's meeting at Manchester, England, July 19, 1949, when he will deliver an address on a phase of surface activity; surface-active phenomena embrace the action of soaps, detergents, wetting agents, and similar products.

Two New Hornet Chain Saws



Two new chain saws made by Hornet Industries Ltd., Guelph, Ont., Canada, have been announced by the company's American representatives, Southern Distributing Co., Front St. and Central Ave., Cincinnati, Ohio, and Tubesing Equipment Co., Station H, Box 85, Buffalo 14, N. Y.

The DJ is a one-man saw weighing 32 pounds. It comes in 16-, 20-, 24-, 30-, and 36-inch sizes in the open-end blade, and 24-, 30-, and 36-inch sizes in the tailstock blades. The Model D, a two-man saw, is available in 24-, 30-, 36-, 48-, 60- and 72-inch-blade sizes. Both machines cut close to the ground and the blades swivel 180 degrees to be locked in any desired cutting position or angle.

With such points of service as the carburetor, magneto, chain oiler, and clutch mounted in the open where inspection and repair can be made quickly and easily, and with the chain designed so that the operator can easily sharpen it in the field using a hand file, the machine is conducive to economic operation and maintenance.

Pick up leaves the easy way

With The

EGAN LEAF COLLECTOR

Here is the Simple, the Cheap Way of Clearing Your Streets of Fallen Leaves

IF you have about 50 miles of streets to keep clean of leaves, and that's about an average sized city, you need only one Egan Leaf Collector, one truck and three men. With the use of this combination you get the *smallest cost per yard of collected leaves.*

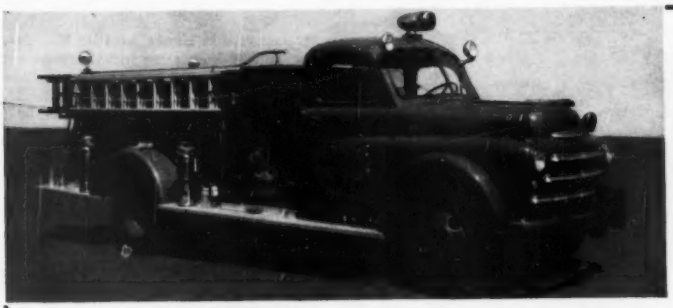
The Egan Leaf Collector can be temporarily installed on any truck, and easily removed . . . It shreds and compresses leaves into a small space . . . The Egan Unit easily handles both wet and dry leaves at one-tenth the cost of hand labor.

WRITE US TODAY FOR COMPLETE DATA

DEEPHOUSE EQUIPMENT CO., Inc.

Leaf Collector Division

162 Farmington Ave. Berlin, Connecticut



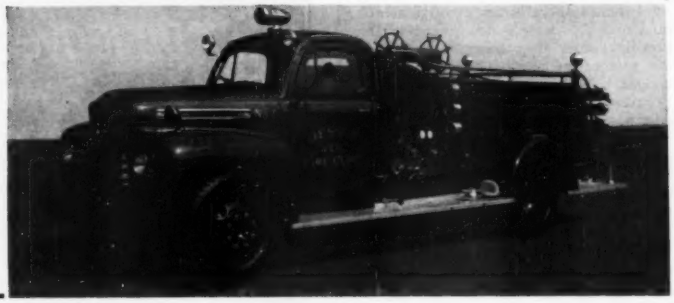
OREN

NEW THREE STAGE UNITS
combining
HIGH PRESSURE FOG
with standard
PRESSURE-VOLUME
SERVICE
all in ONE truck

• OREN ROANOKE CORP. •

ROANOKE, VIRGINIA

Also Single and Two Stage
TRIPLE AND QUADRUPLE
Combination Apparatus
built on your choice
of Commercial Chassis
or Special Fire Chassis



OREN

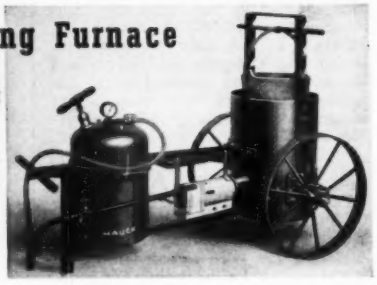
With a HAUCK Combination Lead Melting Furnace

You Never Wait for Hot Lead

Melts 450 Lbs. Lead in 20 Minutes
Melts 200 Lbs. Lead in 10 Minutes

Clean, Intense, Controlled Heat. Powerful Oil Burner Requires 94% Air and only 6% Fuel

Hot metal with no stops for cleaning or feeding fires. Equipment easy to move. Heavy cast iron pot set on rack in heavy sheet steel furnace with roller bearing steel wheels. Burner equipment removable for other heating or melting jobs. Welded steel fuel tank with hand pump, oil-resisting hose, fittings and torch burner on "slide rail."



With a HAUCK Compound Melting Furnace

Jointing Compound is Heated Fast or Slow

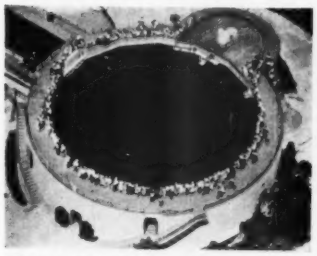
25 Gallon Furnace Melts in 8 Hour Day Enough Compound to Lay 2610 Ft. of 10" Cast Iron Pipe

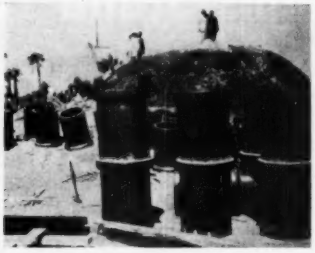
Heats any pipe jointing compound, asphalt, pitch or protective coating enamel. One man operates and moves equipment unassisted. Heavy steel melting pot is set in heavy sheet steel furnace mounted on roller bearing wheels. Burner detachable for other heating jobs. Fuel tank of welded steel, with all fittings and oil-resisting hose.

Write for Bulletin 105

HAUCK MANUFACTURING CO.
112-122 Tenth Street, Brooklyn 15, N. Y.

26 Voters and 50,000 Fish Pose Drainage Problem





This tank is 15 feet deep, 75 feet in diameter. At the right, part of the vast amounts of perforated clay pipe going into Marineland's drainage system. On the left is one of Marineland's tanks, surrounded by spectators.

Florida's Marineland, inhabited by 26 voters, 50,000 fish housed in two giant port-holed Oceanariums, and a variable number of camera enthusiasts and visitors, solved its unique drainage and sewerage problem with an elaborate system of vitrified clay pipe installations as modern and complete as that of most large municipalities.

According to the National Clay Pipe Mfrs., Inc., 100 North LaSalle St., Chicago 2, Ill., designers of the oceanfront community were necessarily required to install a flawless and salt-water-corrosion resistant system of drainage and sewage disposal lines because of the high tides which beset the community each September and because of the great flow of water in the Oceanariums.

Plenty of Calcium Chloride

According to the Calcium Chloride Assn., 1028 Connecticut Ave., N.W., Washington 6, D. C., calcium chloride is once more in adequate supply after a shortage of five years.

Calcium chloride is used in large amounts for street and highway ice control; for providing fast imbedding of abrasives applied to icy highways; for protecting stockpiles against freezing; for highway construction and maintenance, coal treating, concrete construction, air drying, and dust laying.

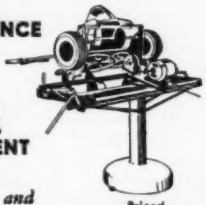
THE MODERN LAWN MOWER SHARPENER

CUTS MAINTENANCE COSTS

•

LOWER CAPITAL INVESTMENT

•



Economically and Quickly Sharpens All Municipal Mowers

Priced $241.50 (less motor)

Sharpens All Reel Type Mowers • Hand, Power or Gang • 10 to 20 Minutes • No Dismantling No Extra Attachments Needed

All reel type mowers, from 5-inch edgers to 36-inch power mowers, are quickly sharpened to extreme ends of both left and right twist reel blades. Handle, wheels, roller and motor remain in place when sharpening is in process. Bed knife is sharpened in same brackets that hold mower in grinding position. No extra attachments required. One lever puts mower or bed knife in grinding position. 100% steel construction. Grinding head rides on five ball bearing races. Small, compact, easy to operate. Sharpens wood chisels, joiner knives and planer blades without extra attachments. Skate Sharpener Attachments available.

1/3-hp. G.E. 60-cycle Motors now available—$21.50 extra.

Send for Free Bulletin No. 258

ORDER NOW • IMMEDIATE DELIVERY

MODERN MFG. CO.

140 N. FAIR OAKS AVE. • PASADENA 1, CALIF

3 way dependability

1. **IN CASE OF FIRE**—dependable, smooth operation . . . clear, large waterways . . . insure plenty of water. Hydrants open fast and easily *with* the pressure . . . and close without water hammer.
2. **IN CASE OF ACCIDENT**—stem held in place below main valve means no water loss due to a bent stem. One man can easily remove all operating mechanism for inspection or repairs.
3. **IN CASE OF LOW TEMPERATURES**—Eddy's positive drip action automatically drains hydrant barrel of all water when hydrant is closed . . . safeguards hydrant against freeze-ups.

EDDY VALVE COMPANY

WATERFORD NEW YORK

A subsidiary of James B. Clow & Sons

Air Curtain Guide Plates

For Perfect Traffic Lines:

AIR CURTAINS, basic feature of all Kelly-Creswell Equipment, make possible the application of clean-cut, attractive lines without coming in contact with the surface.

Special striping guns by DeVilbiss, air-actuated traction and pressure-cleaning equipment also feature K-C equipment. These are the reasons why more Highway Zone-marking material is applied through K-C equipment than through any other make.

TRUCK-MOUNTED AND PORTABLE EQUIPMENT AVAILABLE.

There is a Kelly-Creswell Model that will solve your zone-marking problems.

KELLY-CRESWELL CO., Xenia, Ohio

Will YOUR Signs Stand This Resiliency Test? Bend and Snap Back to Original Shape!

HERE IS ACTUAL FIRST-HAND VISUAL EVIDENCE of a COLUMBIA NON-CORROSIVE PLASTIC HIGHWAY "STOP" SIGN undergoing a SEVERE BENDING TEST! NOTE THERE IS NO CRACKING, DENTING, or COLOR CHIPPING!

An Ohio Police Chief, (name furnished upon request), tested the COLUMBIA "STOP" SIGNAL for elasticity by bending it nearly double . . . yet there were no indications of cracking or denting! (see photograph) The color did not chip off because it is molded integrally throughout the sign.

Considerable effort was required to bend the sign. However, when the Police Chief released the marker, it sprang right back to its original shape! ONLY COLUMBIA PLASTIC HIGHWAY MARKERS have such RESILIENCY!

A metal highway sign subjected to exactly the same BENDING TEST would endanger the paint surface, or invite chipping. The bent metal sign would NOT return to its original shape because it wouldn't have the resilience of a COLUMBIA PLASTIC SIGN.

INDESTRUCTIBLE COLUMBIA PLASTIC HIGHWAY MARKERS meet the latest approved standardizations, and surpass all other highway markers for PERMANENCE and the LOWEST MAINTENANCE COSTS!

Write for
COLUMBIA BOOKLET
It will give you a wealth of up-to-date Traffic Marker information.

GUARANTEE The plastic base material in COLUMBIA SIGNS is guaranteed against rust or corrosion for the life of the installation.

COLUMBIA SIGN & SIGNAL CORP.
10030 LORAIN AVE. CLEVELAND, OHIO

Using the 5-HP GRAVELY
IS LIKE HAVING
EIGHT MORE MEN
On Your Maintenance Crew

Yes, City records *prove* that the Powerful 5-HP GRAVELY Tractor with its 17 attachments does the work of eight men. . . . Some of these attachments listed below will help you cut your city's maintenance costs:

30-Inch Lawn Mower	Power Sweeper
72-Inch Gang Mowers	Snow Plow
42-Inch Sickle Mower	Rotary Plow
50-Gallon Sprayer	Air Compressor

Seventeen attachments are available. Fill out the coupon below for our NEW 1949 Catalog of GRAVELY Equipment. See how the GRAVELY can save your city money—do the work of eight more men! Mail today!

SEND FOR FREE CATALOG TODAY!

GRAVELY MOTOR PLOW AND CULTIVATOR COMPANY
BOX 573, DUNBAR, WEST VIRGINIA

☐ Send Catalog and Prices

Name ..... Title .....
Address ..... Zone..... City .....
County ..... State .....

17 YEAR-ROUND, TIME-PROVED ATTACHMENTS

WORLD'S BEST

Thousands of new installations during 1948 have confirmed Murdock's right to apply "World's Best" to Murdock Hydrants.

They are the "world's best" in design, quality of materials used, quality of workmanship and length of life.

They require very little attention (only the occasional replacement of a washer). Upkeep figured in cents per installation per year.

The Murdock Mfg. & Sup. Co.
426-430 Plum St., Cincinnati 2, Ohio

MURDOCK

Valve-Box Locator Adjusted For Each Territory

One of the services that comes with the purchase of a valve-box locator from the Aqua Survey & Instrument Co., 2513 Leslie Ave., Norwood, Cincinnati 12, Ohio, is an individual adjustment for the territory for which the locator is to be used.

The locator has a 37% cobalt steel needle guaranteed for 10 years; the air-dampened needle is designed to eliminate most fly-wheel action; gum rubber chassis mountings minimize jar; the periscope-type of mirror arrangement allows top reading, and a built-in compass assures 100% accuracy. A shoulder strap eliminates stooping for readings.

Sennet Appointed By A. P. Smith

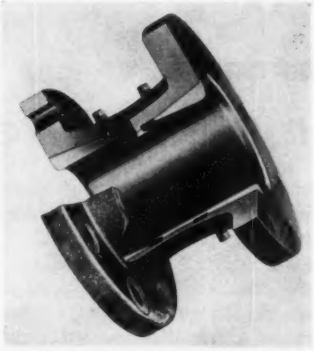
Lowell E. Sennet has been appointed sales representative in the Chicago area by The A. P. Smith Mfg. Co., East Orange, N. J. He succeeds Edward F. Lee, who has retired.

Lowell E. Sennet

Mr. Sennet is an engineering graduate, and was previously associated with the Ludlow Valve Mfg. Co., the Crane Co., and the Grinnel Co. He will make his headquarters at 8 South Dearborn Street in Chicago and his territory will include Illinois, Wisconsin, Indiana, and Michigan.

Flow Tubes For Control of Fluids

The Bethlehem flow tube (Gentile patents) consists of a short length of pipe equipped with two groups of pressure nozzles around the inner periphery; one group points upstream, the other downstream. The nozzle groups are interconnected by common pressure rings from which connections are made to the high- and low-pressure sides of a standard flow meter. The symmetry of the device permits measurement of flow in either direction.



Advantages are that the flow tube is normally less than 1-pipe diameter in length so it can be installed at any section of a pipeline with no straight-run limitations. The flow tube offers a negligible resistance to flow, making possible large savings in power and avoiding the cost of expensive masonry vaults required for some other types of flow-measurement mechanisms.

The flow tubes, manufactured by the Bethlehem Foundry and Machine Co., Bethlehem, Pa., can meter gases and vapors equally accurately. And since all readings are taken at the same section of flow path, the usual corrections for internal energy changes can be dropped out of the flow formula.

Another **"Warren Pipe"** line soon to be paying dividends to its owners through years of carefree service — buried and in service, it's the "forgotten man" of your water system, on duty 24 hours each day, year after year.

Warren cast iron pipe and fittings can be supplied in sizes 2" to 84" with all types of joints and in accordance with standard specifications.

CAST IRON PIPE **CAST IRON PIPE FITTINGS**

GREY IRON CASTINGS

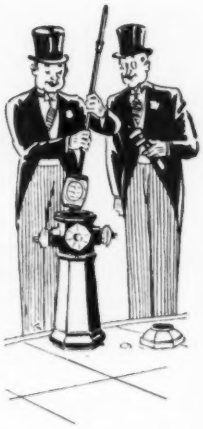
SPECIFY "WARREN PIPE"

WARREN FOUNDRY & PIPE CORPORATION
11 BROADWAY, NEW YORK, N. Y.

WARREN PIPE COMPANY OF MASS., INC.
75 FEDERAL ST., BOSTON, MASS.

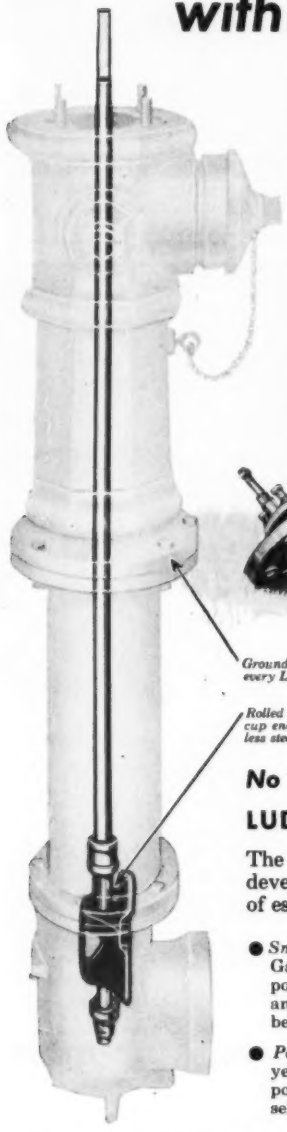
SERVICE . . . .

with a monkey wrench!



A hydrant must allow easy inspection and servicing. The *best* hydrant, therefore, permits the removal of all working parts as one unit. To inspect or service a Ludlow Slide Gate Hydrant you'll need a wrench — that's all. Just take off the top of the hydrant and lift out the stem, *without unscrewing anything below ground.* The entire mechanism, including the gate, bronze wedge nut and drip assembly is attached to the stem.

But . . . *first* turn off the water!



Ground Line Flange is a standard feature with every Ludlow Hydrant.

Rolled Everdur Screw Stem is pinned into the cup end of the cold-rolled steel stem with a stainless steel taper.

LUDLOW FIRE HYDRANTS

Shown here is the distinctive Ludlow List No. 90, a hydrant of the highest quality, now serving in thousands of cities and towns. It employs the Ludlow Slide Gate principle, famous since 1880, and (in addition to easy servicing) offers the following advantages:

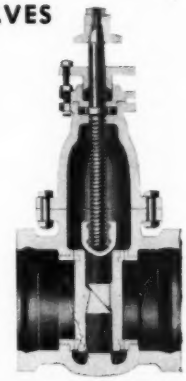
- *Quick Water* with least possible shock and pressure loss. Proper shut-off without water hammer.
- *Proper Drainage*, automatically, at lowest point when closed.
- *No Flooding.* Wedge-locked when closed. Accidental breaking will not cause flood. Hydrant head breaks at ground line is easily replaced without excavation.

No Ludlow Fire Hydrant has ever failed in line of duty!

LUDLOW AWWA DOUBLE DISC GATE VALVES

The parallel seated, double wedge type slide gate valve, developed and perfected by Ludlow, provides a number of essential benefits.

- *Smooth, Positive Operation.* Gates positioned directly opposite ports before wedging, and entirely unwedged before being raised.
- *Positive Closure.* Even after years of service in the open position; flexible-action gates self-adjusting to seats.
- *Simplicity!* Only 2 parts in the wedging mechanism! These are extra heavy, with ample reserve strength and wear resistance for years of constant service.
- *Ready Replacement of Parts.* Simple construction with ample tolerances, permitting ready replacement of parts.



Made in sizes from 2" to 72", N.R.S. and O.S.&Y. with all types of connections.

95

TRADE LUDLOW MARK

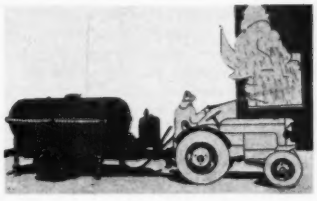
The LUDLOW VALVE SINCE 1866

MFG·CO·INC·TROY·N·Y·

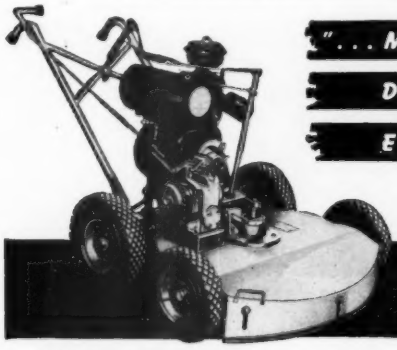
Harley-Davidson's New Salesman

New Salesman Dan Jarvis, recent victor in the Steel Helmet Derby, studies a road map with Domestic Sales Manager Joseph Kilbert in front of the Harley-Davidson Motor Co. building at 3700 W. Juneau Ave., Milwaukee 1, Wis. Mr. Jarvis is sitting on the Hydra-Glide model.

Flush, Sprinkle, Fight Fires with One Machine



The combination flusher, sprinkler, and fire fighter is achieved by the Lull Mfg. Co., 3612 E. 44th St., Minneapolis 6, Minn., in a 1,000- and a 2,000-gallon model. Both have a 3-inch, 160-gpm pump with maximum pressure of 120 pounds. On the two models, all flusher nozzles are adjustable and can be set for flushing or sprinkling. When the flusher is equipped with four nozzles, the two forward nozzles are set for flushing, the two placed to the rear of the wheels are set for sprinkling; all nozzles are adjustable to any working angle.



"... MANEUVERABLE,
DEPENDABLE,
EFFICIENT"

An enthusiastic user thus praises Whirlwind performance in an unsolicited letter. Name upon request.

ROTARY-SCYTHE, SUCTION-LIFT CUTTING ACTION ... PROVED THROUGH A 16-YEAR SERVICE RECORD!

TRADE-MARK
WHIRLWIND Power Mowers

... will do these things for your lawns:

1. Cut grass and weeds of any height. Rotary action cuts like a scythe, no matter how tall the growth.
2. Cut grass and weeds in any condition. Matted and tangled masses are lifted by suction and uniformly cut.
3. Cut clippings into a fine mulch for the turf. Allows tender grass to breathe and thrive.
4. Trim under low-hanging shrubbery and up to the edge of walls, fences, trees, monuments, walks and flower beds. Reduces hand trimming.
5. Cut with equal efficiency on both forward and backward travel. No lost motion.

What more could you ask?

Whirlwind's ability to meet all grass-cutting situations is acclaimed by thousands of satisfied users. Write for complete descriptive literature on Models 31, 24, and Junior, and for name of your WHIRLWIND dealer. Address Dept. A-59.

WHIRLWIND, INC. 3707 NORTH RICHARDS STREET MILWAUKEE 12, WISCONSIN
A SUBSIDIARY OF TORO MANUFACTURING CORPORATION • MINNEAPOLIS 6, MINNESOTA

WATER HAMMER
can cost
a Fortune

yet it costs so little to correct with
THE WILLIAMS-HAGER
flanged SILENT CHECK
VALVE

Used and specified on hundreds of new buildings—and installed on thousands of old buildings to prevent costly "Water Hammer"—the Williams-Hager Flanged Silent Check Valve will solve your problem, too! Write for new technical bulletin.

THE WILLIAMS GAUGE CO.

Pump Valves . . . Water Gauges . . . Gauge Cocks . . . Steam Traps . . . Pump Governors . . . Feed Water Regulators . . . Water Columns

3013 PENNSYLVANIA AVE. - PITTSBURGH (12), PA.

Don't wait for winter! BAUGHMAN Spreaders *give year-round service*

BLIZZARD RAGES AS COUNCIL BUYS CINDER SPREADER

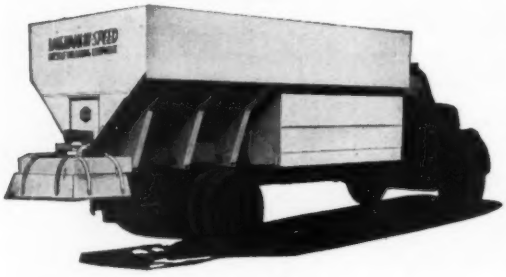
The City Council Wednesday night voted to buy a cinder and abrasive spreader from Baughman Equipment & Service Co., of Jerseyville at $1005.92.

Rising to propose closing of a contract for the cinder spreader, Alderman Wetstein, chairman of the streets repairs committee, glanced out of the window where snow was falling heavily in the first March blizzard.

"This resolution seems a bit late," he apologized; "We could be using a new spreader tonight."

A chief use of the new spreader will be to coat icy streets in winter storms to keep traffic moving. Being of automatic type, only one man, a driver, will be needed on the truck with which it will be equipped. In summer, the spreader will be used in connection with earth street maintenance work.

(Reprinted from Alton Evening Telegraph, Alton, Ill., Thurs., March 10, 1949)



When next winter's crippling storms strike, your summer purchase of a BAUGHMAN Spreader will prove to be one of the wisest investments you ever made. The BAUGHMAN will have been busy all summer long on road maintenance and dust control . . . stockpiling sand and gravel . . . spreading lime, fertilizer and seed in parks and airports.

Then, with roads icy, the BAUGHMAN will spread skid-proofing materials from 8 to 30 ft. at speeds up to 25 mph. Regulated volume . . . one-man control. Built-in exhaust heater for all-weather operation. Saves time . . . saves money . . . SAVES LIVES.

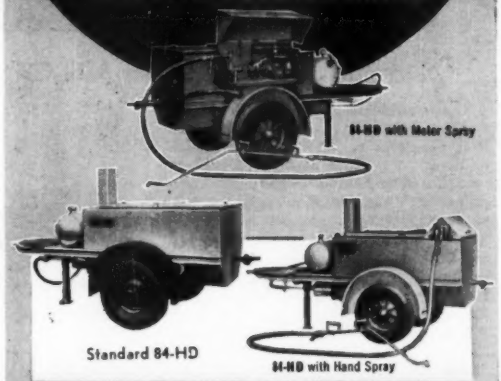
Write for Full Information

BAUGHMAN

BAUGHMAN MANUFACTURING CO., Inc.
251 Shipman Rd. Jerseyville, Ill.
"There is a Baughman Distributor Near You"

speed up road repairs with a

LITTLEFORD model no. 84-HD TAR AND ASPHALT KETTLE



THE LITTLEFORD 84-HD KETTLE has a national reputation for being the most efficient operating unit ever used on road repair jobs. This unit has patented features that make it the fastest and safest heating kettle ever designed. These patented features are the Double Heat Circulation System that utilizes the entire heat output of the burner and the Screened Reservoir which keeps the cold material from cooling off the already melted material and a continuous reservoir of "hot stuff" ready for use at all times.

FOR PATCHING AND REPAIRING Highways, Roads, Streets, Runways, etc., this 84-HD does the job in less time and at lower cost than any similar unit.

THE 84-HD is even more efficient with the addition of a Hand Spray or Motor Spray Attachment. These attachments make the 84-HD a real maintenance unit.

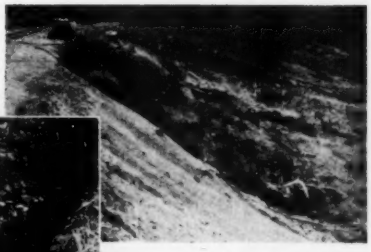
MANUFACTURERS OF

"Tankar" Steam Heaters
"Kwik-Melter" Roofers Kettles
Trail-O-Rollers
"Spray Master" Pressure Distributors
Highway Brooms
Tool Heaters
Trail-O-Distributors
Asphalt Supply Tanks
No. 101 Utility Spray Tanks
84-HD Asphalt Kettles

LB LITTLEFORD

LITTLEFORD BROS., Inc.
500 East Pearl St., Cincinnati 2, Ohio

Prevent Slides With Subsurface Drainage



A close-up of the Hydrauger at work—and a far shot showing the compressor on the road and the boring machine going through and under the hill.

As a substitute for costly stone or concrete bulkheads or elaborate piling and shoring arrangements in cuts and fills, Hydrauger-placed drains are often used at great savings. These eliminate water saturation by using the Hydrauger machine to bore horizontal drainage holes in which are inserted perforated liners. Usually 4-inch bored and reamed holes placed at predetermined spacings are effective.

The Hydrauger, manufactured by the Hydrauger Corp., 681 Market St., San Francisco 5, Calif., was originally developed for installing pipelines and drainage systems under highways and paved streets. Operated by compressed air, it can produce bores up to 200 feet long; the average one-man operation is 50 feet of 4½-inch hole per hour.

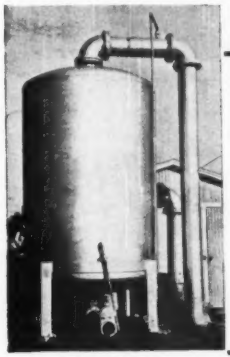
Save on Demolition Jobs

The Warsop rock drill may be operated in any position from the vertical to the horizontal; for operation at high altitude a specially designed distance piece can be supplied to replace that which is fitted as standard in order to raise the compression of the engine and counteract the adverse effect, common to gasoline-driven engines, of the rarified atmosphere on the power output.

About 2,200 blows per minute are delivered. A feature of this machine is that the hammer piston is returned to the striking position by means of by-passed gases, without the aid of springs or other mechanical devices. The same action rotates the drill, while clearance of the dust accumulation from the hole is effected by the gases delivered under

pressure through the drill steel while the machine is in operation.

The instrument is supplied by Warsop Power Tools, Inc., 347 North 12th St., Philadelphia 7, Pa.



WATERWORKS OFFICIALS!
WELCOME TO A.W.W.A. CONVENTION

Don't pump your pipe lines and water towers full of sand use a

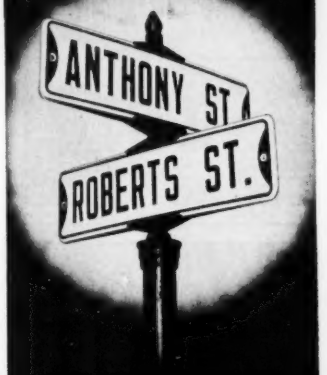
McCURDY
Sand and Water Separator

Vertical pressure type, helical flow, centrifugal action; built of fabricated steel for any capacity or working pressure. ***Applicable also to other fluids. WRITE:***

McCURDY SAND AND WATER SEPARATOR CO.
4875 Pacific Blvd., Vernon 11, Los Angeles, Calif.

Beautiful, Legible, Low-Priced

STREET NAME SIGNS



WRITE FOR CATALOG

Cataphote Corporation
TOLEDO, OHIO

When the Heil Fleet's In

Garbage-collection Costs Go Down, Sanitation Standards Go Up . . .

because: the rugged simplicity of HEIL Colecto-Pak design reduces maintenance costs

Everybody loves a winner. That's why you find Heil Colecto-Paks in city after city. They have been bought, in most cases, after outstanding performance on tough competitive tests — tests that prove their economy.

Here are a few reasons why Colecto-Paks step out ahead of the field to give you lower costs:

EASY TO LOAD — 35-inch loading height lets your crews work easier and faster.

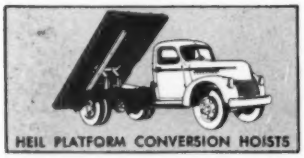
BUCKET UNLOADS IN LESS THAN A MINUTE — smooth-operating double-acting hoists speed the loading cycle.

RAPID DISCHARGE — famous Heil "twin-arm" hoist raises body to 45° dumping angle in 12 seconds.

Fully-enclosed Heil Colecto-Paks are available in 9 and 12-cu. yd. sizes (24 cu. yds. of wrapped garbage are carried in a 12-yd. body because a powerful hydraulically-operated packer plate compresses the load).

Specify Heil Colecto-Paks on your next bid. Be assured of lower collection costs and improved sanitation. Write us for latest literature.

HEIL DOZERS



HEIL PLATFORM CONVERSION HOISTS

HEIL BODIES AND HOISTS

HEIL ELEVATING TAILGATE

BH-147

THE HEIL CO.

Dept. 4359, 3043 West Montana Street, Milwaukee 1, Wisconsin
Factories: Milwaukee — Hillside, N. J.
District Offices: Hillside, Washington, D. C., Atlanta, Milwaukee, Detroit, Chicago, Minneapolis, Kansas City, Dallas, Los Angeles, Seattle.

Containers Collect Refuse But Not Rain

The Wheeling Municipal refuse container, for streets, parks, and schools, is open at the top—an added attraction for the muscle-weary citizen—and is constructed of ExM Wheeling expanded metal.

As added insurance against rough handling and for longer life, a solid steel bar ring is welded to the inside of the basket at the point where the container is usually bumped on the side of a truck. Rain or melting snow cannot collect in the container because of its open sides and perforated steel pan bottom to afford perfect drainage.

The Wheeling Corrugating Co., Wheeling, W. Va., makes these containers 34 inches high and with a 24-inch top diameter, 19-inch bottom diameter.

More Plants, Personnel For Mathieson

A. T. Bennett **Dr. C. R. Prutton**

As a result of the recent acquisition of several plants by the Mathieson Chemical Corp., 60 E. 42nd St., New York 17, N. Y., the following personnel changes are announced:

Dr. Carl F. Prutton, vice-president-director of research and operation of all plants.

Arthur T. Bennett, vice-president, in charge of the eight plants acquired from Southern Acid and Sulphur Co.

R. B. Worthy and J. F. Newell, named vice-presidents.

The NETCO CATCH BASIN CLEANER

With Pneumatic Controls

A Necessity For Every Municipality

- **Simple**
- **Positive**
- **Powerful**

PNEUMATIC BUCKET

Although it has large capacity, the Netco Bucket will operate through an opening as small as 16 inches. This Bucket will easily remove sticks, stones, bottles, wire, and other such debris from all catch basins.

These Cities and Many Others Own One or More

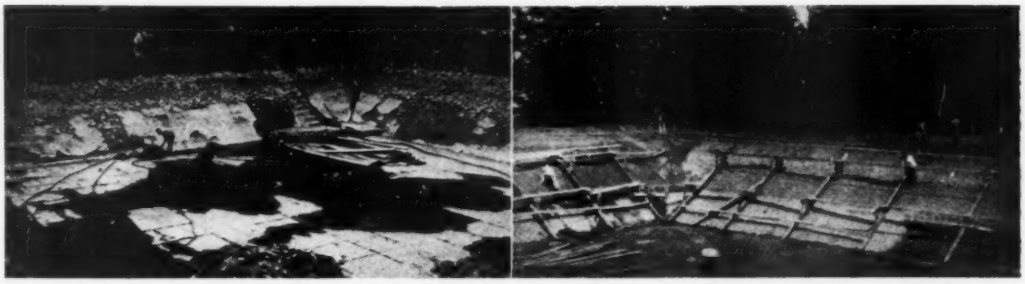
Netco Catch Basin Cleaners

Boston, Mass.
New York City, N. Y.
Indianapolis, Ind.
New Brunswick, N. J.
Harrison, N. J.
East Cleveland, Ohio
Binghamton, N. Y.

- **The Netco Catch Basin Cleaner can be mounted on any short wheel base truck having at least 8 ft. in back of cab. You can purchase unit separately and mount on your own chassis.**
- **The Netco Unit can be removed from truck and chassis in 30 minutes.**
- **The Netco can be operated continuously because the material removed from catch basins is loaded into other trucks. This unit will average 20 to 30 catch basins per 8 hour day.**
- **The Netco Bucket closes pneumatically, assuring positive and maximum digging efficiency.**
- **Positive and simple control of pneumatic bucket, boom swing, hoist clutch and boom brake by compressed air.**
- **The Bucket is lowered and raised by one cable. Only one hose is required to close it, and it is opened by powerful spring action.**
- **The Netco has a hoisting capacity up to 1500 lbs.**

For Complete Details Contact

NETCO DIVISION
CLARK-WILCOX COMPANY
118 Western Avenue
Boston 34, Massachusetts



The reservoir of a western New York town before and after it was repaired.

"GUNITE" SAVES LEAKING RESERVOIRS

Leaking reservoirs, and those which are deteriorating can be lined with reinforced "GUNITE" rapidly and economically and will result in a new reservoir at a fraction of the cost of an entirely new structure. Such construction is watertight and will require very little maintenance after it is placed. This is of particular interest to those who are responsible for the successful operation of a water system. Reinforced "GUNITE" linings usually 2 inches to 4 inches thick can be applied to reservoirs built of stone masonry, brick, or concrete.

NOW is the time to give consideration to repairs. Our engineers will gladly inspect your facilities and make recommendations for permanent, economical repairs. No obligation, of course.

Write our nearest office for catalog and full details.

PRESSURE CONCRETE CO. CPC

193 EMMETT ST., NEWARK, NEW JERSEY
309 SOUTH COURT ST., FLORENCE, ALABAMA
33 NORTH LA SALLE ST., CHICAGO, ILLINOIS

STREET SIGNS

Mak-A-Sign letter-changing stencils are easy to use, fast, efficient, inexpensive to operate. Makes legible street name on curb, sidewalk, wood or concrete posts, or signboards. *Write for Descriptive Folder and Prices.*

Exclusive territories open for SALESMEN or Distributors now doing business with municipalities. Send full details.

MAK-A-SIGN CO.

P. O. Box 2290, Birmingham, Alabama

THE MUNICIPAL INDEX

Saves your catalog from the wastebasket. It reaches the buyer when he's buying.

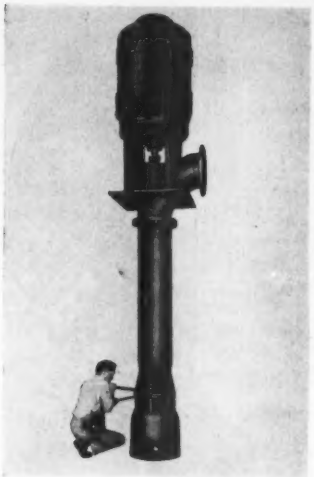
Approximately 16,000 city, and town officials and private water company superintendents who receive the annual Municipal Index use it regularly as a buying guide.

THE MUNICIPAL INDEX

470 Fourth Avenue New York 16, N. Y.

In the Beautiful
MOJAVE DESERT
CALIFORNIA
MAC DUDE RANCH
● The Dude Ranch Capital of America
● In Beautiful Apple Valley and Lucerne Valley
● 15 Ranches to Choose From
● Most Ideal All Year Climate — No Fog Permanent Sun Tan Informality
● Everything Free Any Day the Sun Does Not Shine
FUN · SUN · RIDING
SWIMMING · DANCING
For Reservations or literature, write:
Geo. McCarthy, Manager
MAC DUDE RANCH
Victorville P.O., Calif.

Vertical Circulating Pumps For Cooling Towers, Drainage



This pump circulates 5,000 gpm of cooling water against a head of 115 feet in Venezuela.

Byron Jackson's new line of single and multi-stage vertical circulating pumps may be used not only for cooling towers where pumps of medium to high capacity are required, but also for such purposes as dewatering and drainage, and as river intake pumps.

Suspended vertically to require little floor space, the pumps are grouped as smaller sizes, from 5 to 12 inches in capacities from 20 to 3,000 gpm, and as larger sizes above 12 inches in capacities from 1,500 gpm.

They are manufactured by the Byron Jackson Co., Pump Division, Los Angeles 54, Calif.

Back Up to Dump Trailer

The Tri-Tralor, manufactured by Hotchkiss Steel Products Co., Bradford, Ill., is a self-dumping trailer that utilizes a shock-absorbing tongue to lift the load to dumping or spreading positions: by backing the pulling vehicle, the tongue telescopes pushing up thrust rods that pivot the trussed frame on the rear axle. No cranking, cable, hydraulic system, or help from the vehicle's power take-off is required.

The front-wheel caster swivels 360 degrees, can hold a load of 5,200 pounds, and is designed to carry any conventional box.

Solve your leaf or clean-up problem with a

VACUUM Leaf Loader

Mechanized Speedy Sanitary Low Cost

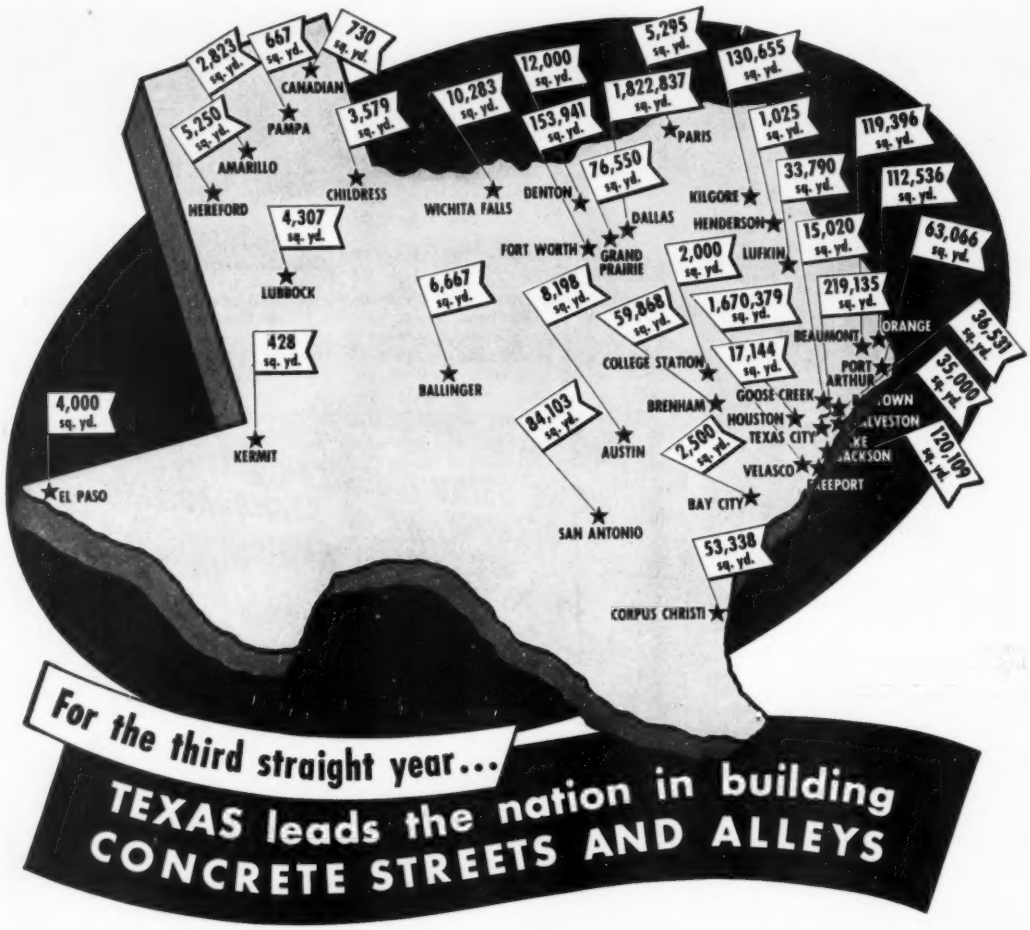
Write for leaflet

LEAF LOADER DIVISION
American Structural Steel & Tank Co.
21050 W. 8 Mile Road
Detroit 19, Michigan

● By using Buffalo-made Meters throughout, you base your standardization on the higher meter earning power and other benefits that Buffalo's quality construction and simplicity of design will bring.

BUFFALO METER COMPANY

2902 MAIN STREET, BUFFALO 14, N. Y.



For the third straight year...

TEXAS leads the nation in building CONCRETE STREETS AND ALLEYS

IN 1948, for the third consecutive year, Texas cities built more concrete streets and alleys than cities in any other state. This three-year leadership is the result of paving programs in 35 cities, whose individual yardage is shown on the map.

These cities, building for the future, have placed the following yardage of long-lasting, economical concrete pavement in the last three years:

1946	853,019 sq. yd.
1947	1,657,782 sq. yd.
1948	2,382,349 sq. yd.
Total	4,893,150 sq. yd.

If this tremendous yardage of durable concrete pavement were placed in one continuous 20-foot highway it would extend nearly 420 miles—from Laredo to Fort Worth or Dallas. This program demonstrates a state-wide recognition of concrete as the pavement that serves taxpayers and motorists best over the years.

In other states hundreds of progressive cities are also building durable streets—and saving taxpayers money—by paving with concrete. Concrete is ***low-annual-cost*** pavement because it usually costs less to build than any other pavement of equal load-carrying capacity, costs less to maintain and lasts longer.

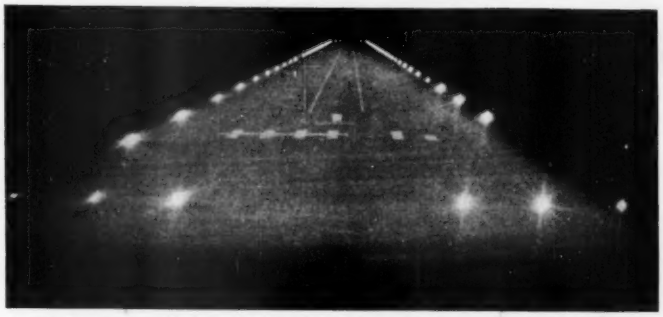
Concrete streets and alleys are easier to keep clean. They are easier to illuminate. They are much safer. Write today for a free copy of "*Design of Concrete Pavements for Municipal Streets.*" Distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A5-4, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Coming In for a Landing



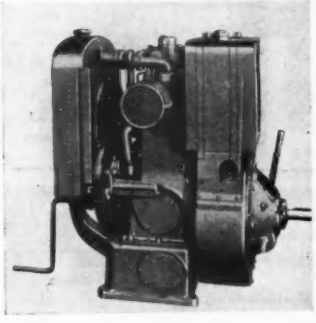
A pilot's-eye view of the runway for instrument landings at McCarran Field near Las Vegas, Nevada, lighted by 72 high-intensity runway marker lights and 12 high-intensity green threshold lights, each of which at capacity output is capable of producing over 55,000 candlepower of light. The system was developed jointly by the General Electric Co., Schenectady 5, N. Y., and the American Gas Accumulator Co., 1027 Newark Ave., Elizabeth, N. J.

Radios in Police, Fire Cars For Rhode Island Town

The East Providence, R. I., town council has awarded a contract for the installation of FM two-way radio for the police and fire departments to Motorola, Inc., 4545 West Augusta Blvd., Dept. A. C., Chicago 51, Ill. Sixteen mobile radio units will be acquired for the two departments.

Also ordered were seven motorcycles, six 2-wheel and one 3-wheel, from the Harley-Davidson Motor Co., Milwaukee, Wis., purchased through the Arnold Motorcycle Co., 516-518 Broad St., Providence; the motorcycles will come equipped with Motorola radios.

Nordberg Offers 10-hp Diesel Engine

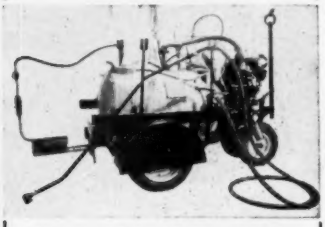


A new 10-hp diesel engine of the vertical type, four-cycle, single-cylinder, mechanical injection, is announced by Nordberg Mfg. Co., Milwaukee 7, Wis. Production is expected in the near future of two- and three-cylinder models of higher horsepower ratings.

This new engine augments Nordberg's line of two- and four-cycle diesel engines with ratings from 175-hp to 8,750-hp for oil, natural gas, or combination fuels. Nordberg now has the distinction of manufacturing the widest size range of diesel engines in the United States.

The new 10-hp engine is available for small stationary and portable power applications, as electric generating units, pumping units, and power units for belt or chain drive or direct connection and also with a stub shaft for direct connection. Hand starting or 12-volt electric starting is optional.

Easier — Faster PATCHING



TARCO SPRAYERS

A quicker, cleaner method. Blocks of perfectly contouring patches done while other methods are barely starting. Applies tars, asphalts and emulsions, cold or heated. Applies paints and weed killers. Direct drum types and tank types. Thousands in use.

TARRANT MFG. CO.

East Ave., Saratoga Spgs., N. Y.

PILING JACKETED WITH "GUNITE" BEFORE DRIVING SAVES MONEY

Untreated piles can be encased with "GUNITE" at a total cost of less than the purchase price of plain creosoted piles.

The pictures show pile encasement done at Charleston, S. C. in 1945. At the top the reinforcing and application of "GUNITE" are shown. Below are some of the 1300 piles with "GUNITE" unharmed by driving.

Chief Engineer of another port which previously installed 1500 piles in this manner has stated" . . . last month we made a careful examination of the "GUNITE" piles and found no evidence of cracking, spalling or other detrimental effects of sea water . . . during the fifteen years that these piles have been in service we have spent not one cent for repairs."

Bulletin D2400 fully describes and pictures this and many other profitable applications of "GUNITE". Send a request, on your letterhead, for your copy today.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE CEMENT GUN

FASTEST WAY
to clear out trees

★ Weighs only 45 lbs. complete with 20" blade and chain

★ 5 models (20 to 60 in. blades) for trees to 5 feet in diameter

★ Full 5 hp.. Chain is easily sharpened by hand filing

Save days of labor in clearing trees—limbing, felling, and bucking—by using McCulloch full-swivel chain saws.

The McCulloch, with the Rip-Cross chain will rapidly fell, rip, and buck any kind of wood. It's a *heavy-duty* saw that's really *light*. The McCulloch can go anywhere—in steep and rough country where heavy machinery would bog down.

MODERN TOOL FOR PUBLIC WORKS For tree maintenance, for road-building and general construction, and for clearing and maintaining power-line right-of-ways, speed and efficiency result from the use of McCulloch saws. Send for detailed information.

FELLS TREES CLOSE TO GROUND

SEND for detailed information

McCULLOCH MOTORS CORPORATION
6101 W. Century Blvd., Dept. MM
Los Angeles 45, Calif.

SPEEDS UP LIMBING

BUCKS ANY LOG QUICKLY

STOP LEAKS
in any type roof
with STONHARD ROOF RESURFACERS

You can prevent and stop leaks in any type roof—tin, iron, concrete, slag, gravel, tar paper or felt. Any maintenance man can do a perfect job—no special equipment needed, either a brush or a trowel can be used. Before you start ripping off or relaying an expensive new roof—investigate STONHARD ROOF RESURFACERS.

STONHARD COMPANY
Building Maintenance Materials
203 Stonhard Building
1306 Spring Garden Street
Philadelphia 23, Pa.

Send for FREE Folder

STONHARD COMPANY
203 Stonhard Bldg., 1306 Spring Garden St.
Philadelphia 23, Pa.
Department .....
Mr..... Title.....
Address .....
City..... Zone.... State.....

"A Great Labor Saver"

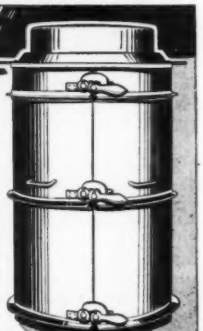
CLEANER STREETS AT LOWER COST!

Harper BIG Handle Braced Brushes make real labor savers for City Street Departments. Steel Scrapers loosen mud and grease while sweeping. Some cities save as high as half their cleaning labor. See catalog showing this and many other brushes for cleaning city streets and municipal buildings.

Write

HARPER BRUSH WORKS
250 Lake St., Fairfield, Iowa

THE "Quinn Standard" FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1623 17TH ST. BOONE, IA

Neptune Adds Sanders to Staff

John F. Sanders, formerly superintendent of the water works at Boonville, Mo., has joined the sales force of the Neptune Meter Co., 50 West 50th St., New York 20, N. Y., as sales engineer to cover Missouri from the headquarters at 25 W. 15th St., North Kansas City 16, Mo.

J. F. Sanders

Chairman of the Missouri section of the American Water Works Association and a member of the executive board of the Clear Streams Commitee, Mr. Sanders at one time held the post of chairman of the Missouri Water and Sewerage Conference.

Line Material Expands Customer Field Service

The Line Material Co., Milwaukee 1, Wis., in its program of expanded customer field service to provide help as far as apparatus problems are concerned, has added eight apparatus engineers to its staff. These men are specialists in the application and operation of transformers, oil-circuit reclosers, capacitors, and protective and switching equipment. The engineers and their territories are: H. Naramore, South Atlantic Division; W. J. Helpern and J. F. Harrigan, Eastern and New York Divisions; R. C. Kirk, South Central Division; G. Cooper, East Central Division; H. T. Zamzow, Mountain States Division; W. E. Bracey, Southwest Division; R. D. Besse, West Coast Division.

CAST IRON PIPE

Bell and Spigot Water Main Pipe

Class 150 and 250

2,100 ft. 4 in.
21,500 ft. 6 in.
9,250 ft. 8 in.
14,250 ft. 10 in.
12,450 ft. 12 in.

12 ft. and 18 ft. lengths

Immediate delivery, any quantity

Write — Wire — Phone

Sonken-Galamba Corporation

2nd and Riverview (X-465)
Kansas City 18, Kansas
THatcher 9243

"We have used GREEN-BAK covers for years —

and I do not hesitate to recommend them. In 1948 we responded to 13,631 alarms and spread 19,860 covers. Salvage of physical property runs into many thousands of dollars, to say nothing of values accrued in prompt rehabilitation of premises for continued work or living. Salvage pays dividends . . . big dividends . . . in fire department public relations."

★FIRE CHIEFS

Specify *Shuredry* Salvage Covers. They pass every test for water penetration, seepage, resistance to cracking when folded, pliability in coldest weather. Fulton Green-Bak Salvage Covers are light in weight, easy to handle, and are the preference of fire departments everywhere.

For Top Dependability, Specify

Shuredry
GREEN-BAK
SALVAGE COVERS

For further information, write your nearest Fulton branch

★CITY MANAGERS

Other quality Fulton Products that will give you long, economical service are Fulton Triple-Strength Tarpaulins, Fulco Cotton Concrete Curing Mats.

Shuredry Salvage Covers can be obtained through your regular fire equipment dealer.

Fulton BAG & COTTON MILLS
Atlanta • St. Louis • Dallas • Denver
Kansas City (Kans.) • Minneapolis • New Orleans
Los Angeles • New York, 434 Broadway • Winter Haven (Fla.)

fast · · · economical · · · convenient

***point-of-use** record copying!*

the New

record DEXIGRAPH

Now you can easily photocopy administrative records right where they are used—and do it faster, simpler and in a wider range of sizes than ever before.

You can roll the new Record Dexigraph on casters from one department to another—wherever your records are located. It plugs into any standard electrical outlet. No plumbing or special wiring is required. Developing is an independent operation.

You can copy records up to 9¾" x 14" at same size or at any of five reductions down to 50% of original size. Larger records up to 14" x 17" can be copied at various smaller sizes for easier handling and filing.

You can make up to 300 exposures an hour. No previous experience is necessary. Positive adjustments and an automatic timer make it simple to operate the Dexigraph. Every copy is completely accurate, proofreading is eliminated. Paper pre-cut to standard filing and binding sizes reduces costs to a minimum.

To find out exactly what the Record Dexigraph can do for *you*, write now for your free copy of this new illustrated booklet. Photo Records Division, Room 251, Remington Rand Inc., 315 Fourth Ave., New York 10.

Remington Rand

FOR GREATER BUSINESS EFFICIENCY—USE PHOTOGRAPHY

Jointing Compound In Easily Divisible Form

Hydro-Tite, a jointing compound for bell-and-spigot water mains, manufactured by the Hydraulic Deve'opment Corp., 50 Church St., New York 7, N. Y., is now available in a handy sheet of twelve 2-pound pigs with each bar easily breaking off to avoid waste and reduce handling time.

Hydro-Tite may still be obtained in 100-pound waterproof bags for those who prefer the powdered form of this product, which contains a germicide.

Reflectorized Signs

After cleaning and drying the existing sign, apply binder and spray spheres on the sign.

Then apply Prismo numeral paste, and there's the sign.

Reflectorized signs and markers are a "must" today when 24-hour traffic control is needed. The glass-bead method has grown in popularity, not only because of the effective night appearance, but also because of the wear factor. Prismo reflectorization is by means of a semi-plastic binder and tiny glass spheres applied to the binder. The manufacturer says that signs made with this material should last five to eight years without maintenance. The signs are made with a Prismo Sign Kit. Detailed instructions are given in a number of new free folders available from the Prismo Safety Corp., Huntingdon, Pa. The following folders are available:

Joe Prismo, Jr.—a folder describing Prismo Life-Line with the creamy plastic binder and the glass spheres that autocollimatize. Any standard striping machine can apply "the line with the shine." Described also is the Prismo Sign Kit.

Reflecting Runway Markers—for directing airport traffic night and day. Markers in liquid form are applied directly to the runway. While the liquid binder is wet, the glass beads are measured out maximum reflectivity.

Now You Can Reflectorize—a series of instruction sheets and folders that tell how to reflectorize (1) silk-screened signs; (2) by the roller method; (3) spray method; (4) in quantity; (5) permanent structures like culverts, guard rails, truck tailgates; (6) sign blanks; (7) signs in place on the streets.

Courtesy of Collier's

To all engineers and contractors:

NOSTRIP makes money for you BECAUSE

1. Aggregates can be wet or dry in seal-coating, surface treatment, cold plant mix or mix-in-place construction.
2. No delay caused by inclement weather; Demurrage losses cut to a minimum.
3. Fewer equipment and man hours lost as work may progress during unfavorable weather, which ordinarily halts your operations.
4. Mix-in-place or cold plant mix construction time materially reduced. Wet aggregates can be thoroughly coated with less blading and mixing, and once coated will not strip.
5. When Nostrip is used, many highway departments permit bituminous work to begin earlier in the spring and terminate later in the fall, adding extra weeks to the paving season.

Nostrip has been specified in many of the largest hot mix asphaltic concrete paving jobs constructed in recent years and is becoming as widely used with ACs as with cut backs or road oils. Most oil companies, both large and small, will furnish you with Nostrip-treated asphalt. Or you can easily blend Nostrip with asphalt in the field.

Nostrip has been tested by Federal and State research authorities over a period of years and is approved for Federal Aid roads.

Demand Nostrip, a tested and proven additive with years of successful performance all over the world. There is an agent in your state and warehouse stocks are strategically located for immediate delivery.

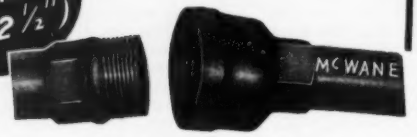
YOUR FIRST DRUM IS OUR BEST SALESMAN

MAGUIRE INDUSTRIES, INCORPORATED
NOSTRIP DIVISION
122 East 42nd Street **New York 17, N. Y.**

LAYS THE FASTEST—LASTS THE LONGEST!

This OVERSIZE (2½")

THREADED JOINT



With Hex Grips that Hold the Wrench Firmly

CUTS INSTALLATION TIME AND COST

Skill and experience are unnecessary. No cumbersome equipment is necessary. No slow motion. Any man with a wrench can lay this pipe for all you need to do is "screw 'em together!"

You'll have corrosion-resisting, 100-year mains with a minimum of upkeep.

McWANE CAST IRON PIPE Co. Birmingham

McWANE 2" CAST IRON PIPE

Let SILENT HOIST Catch Basin Cleaning Cranes Show You How to . . . .

Clean 30 to 50 Sewer Basins per Day

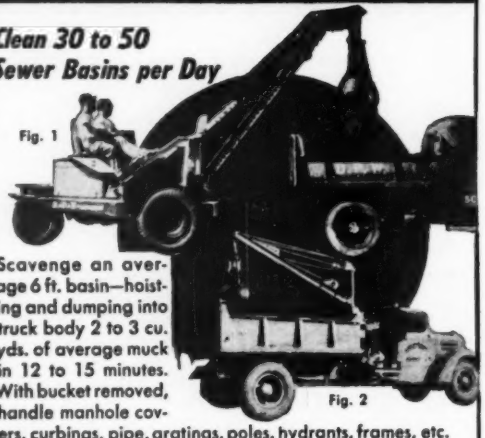


Fig. 1

Fig. 2

Scavenge an average 6 ft. basin—hoisting and dumping into truck body 2 to 3 cu. yds. of average muck in 12 to 15 minutes. With bucket removed, handle manhole covers, curbings, pipe, gratings, poles, hydrants, frames, etc.

Fig. 1—Model A2 *KRANE KAR* Swing Boom Mobile Crane . . . self-contained unit.

Fig. 2—Model Q2PX for mounting on standard motor truck, with or without dump body.

A FEW USERS: City of Scranton, Pa.; Township of Endicott, N. Y.; Kearny, N. J.; Freeport, L. I.; New York City.

Bulletin No. 67 Tells the Story . . . Ask for It.

SILENT HOIST & CRANE CO.

846 63rd STREET, BROOKLYN 20, N. Y.

KILL Weeds At The Roots!

DOLGE SS WEED-KILLER

Goes to the root of your weed problem. Use in economical solution where no vegetation whatever is desired. Sterilizes the soil so windblown seeds cannot normally sprout in it. Penetrates to the roots—and KILLS! This modern chemical weeding saves money and hours of backbreaking labor.

E.W.T. SELECTIVE WEED-KILLER

(2-4-D)

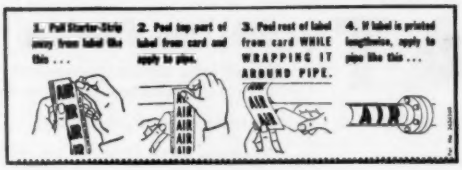
Works down thoroughly to the roots of brush, dandelions, plantains, poison ivy, ragweed, sumac and other plant pests, but will not kill most turf grasses. Best used for maintaining beauty of lawns and fairways.

Write for literature explaining these tested DOLGE products fully and giving specific directions for their use.

THE C. B. DOLGE CO.

WESTPORT, CONNECTICUT

Pipe Markers Identify Piping Systems


1. Pull Starter-Strip away from label like this . . .
2. Peel top part of label from card and apply to pipe.
3. Peel rest of label from card WHILE WRAPPING IT AROUND PIPE.
4. If label is printed lengthwise, apply to pipe like this . . .
AIR

New self-adhesive pipe markers, for fast, accurate identification of materials carried in pipes, can now be used in place of painting and stenciling. The markers conform to American Standards Association Standard ‡A13, "Identification of Piping Systems," compiled by ASA under the sponsorship of the National Safety Council and American Society of Mechanical Engineers. Each marker is 2¼ inches wide by 9 inches long.

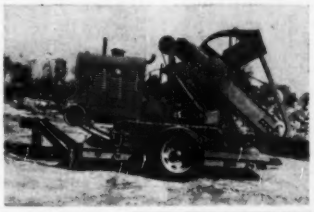
Brady pipe markers are printed with the names of the materials in large black letters on the correct background colors. They are readable up to 75 feet. Weather- and water-proof, they stick without moistening to bare or covered pipes.

A folder listing more than 150 stock pipe markers and samples is available without charge from W. H. Brady Co., Dept. 79, 815 North Third St., Milwaukee 3, Wis.

New Jahn Trailer In Low-Price Field

The new tilt-type trailer in the low-price range, manufactured by the C. R. Jahn Co., 1106 West 35th St., Chicago, Ill., has a 3-ton capacity and hauls such small equipment as mixers, ditchers, compressors, and tractors.

The platform height is 14½ inches, keeping the loading incline at the minimum when the platform is tilted, so that neither jacks nor a loading ramp is required. An automatic safety lock holds the 56- by 132-inch platform in position when loaded or empty. The trailer may be used behind a ½-ton truck with a pintle' hook.



TARCO
can carriers

"Street Sweeper's Friend"

Single-piece welded frame. For one or two cans. Choice of tiring: plain steel, solid rubber, tough-walled pneumatics. Bearings: plain or roller. Full swiveling caster wheels. Silent can clamp. Safety warning flag. Balanced and light running.

Tarco welded carriers are STRONG.

TARRANT MFG. CO.

East Ave. Saratoga Springs, N. Y.

CIRCUL-AIR
FIRE HOSE DRYER

WRITE FOR BOOKLET

Illustrates how Circul-Air saves hose, shortens drying time, prevents mildew and rot, air conditions as it dries, improves station design.

THE CIRCUL-AIR CORPORATION
575 E. Milwaukee Street
DETROIT 2 MICHIGAN

SPARLING MAIN-LINE METERS

ACCURACY Guaranteed within 2 Per Cent

Guesswork costs money! You KNOW how much water passes through a main line by reading the totalizer mounted right at your Sparling meterhead—easily installed at a modest cost!

Accuracy is guaranteed over a wide rated range of flows and there is PRACTICALLY NO PRESSURE LOSS.

Sparling Meters come in many sizes and styles in Flanged, Bell & Spigot and Threaded Tubes, and with Saddles to be mounted on the pipe itself.

Sparling COMPOUNDS assure accurate measurement of flows ranging as wide as 1 to 125.

Quotations and Bulletin 310 come at your request

J. W. SPARLING Manufacturers of WATER MEASURING EQUIPMENT

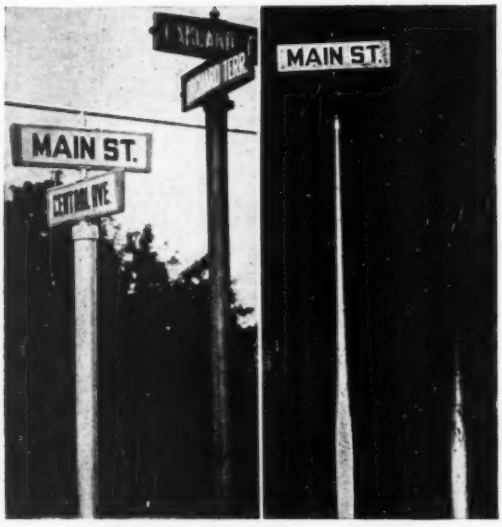
LOS ANGELES.....Box 3277 Terminal Annex
CHICAGO 8.....1500 South Western Ave.
BOSTON 8.....6 Beacon Street
DALLAS 1.....509 North Ervay Street
622 Broadway .....CINCINNATI 2
101 Park Avenue.....NEW YORK 17
1932 First Avenue.....SEATTLE 1

TOMCAT

Street Signs Shine Like a Cat's Eyes in the Dark

Day

Night



DAY NIGHT

Erect the new TOMCAT next to an ordinary street name sign—and compare!

TASSCO SIGNS

TOMCAT is highly readable both day and night. It's also vandal-proof, weather-proof; slanted to correct eye angle.

All aluminum, boltless construction, strengthened by center staff.

And COSTS NO MORE than any framed porcelain enamel or embossed street sign.

Also a complete line of traffic signs and aluminum street lighting poles

Write for Booklet

TRAFFIC AND STREET SIGN COMPANY

NEWARK 5, NEW JERSEY

Cut Your Patching Costs

Heated plate impacts, finishes and cures hot or cold materials — ready for traffic.

No roller, no water, no waiting.

Completes 60 to 80 sq. ft. per minute. Works flush to curbs, rails, manholes.

Fast—60 to 80 Sq. Ft. a minute

Works where a roller can't

Because it works by *impaction* — hitting 1700 to 2000 blows per minute of more than 700 foot pounds impact with its heated plate — the Wayer Impactor puts down pavement patches winter or summer, smoothly finished, thoroly cured, sealed tight and ready for immediate use.

Any bituminous material or dry concrete base for patching roads, streets, parking lots, etc., paving walks and floors. Also tamps earth. Easily portable. Big cost saving. Send for Bulletin 25-8.

WAYER IMPACTOR

Wayer Impactor, Inc., 12 N. Third Street, Columbus 15, Ohio

"GUNITE" CONCRETE

(Since 1915)

SPECIALISTS IN CEMENT GUN WORK

RESERVOIR LININGS (NEW AND OLD) • CONCRETE AND MASONRY REPAIRS • STEEL ENCASEMENT • FIREPROOFING • STEEL COAL BUNKER, STACK, HOPPER, AND PLATE LINING • SEWER LINING AND REPAIRING • CANAL, DITCH, AND DRAIN LINING.

GUNITE CONCRETE & CONST. CO.

1301 Woodswether Road Kansas City 6, Missouri

District Branch Offices

R. N. Turner, Dist. Mgr., 228 N. La Salle St., Chicago 1, Ill.
B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.
Philip D. Barnard, Dist. Mgr., 2036 Addison, Houston 5, Texas.

Branch Offices: DENVER • DALLAS • NEW ORLEANS

SOLVE YOUR SEATING PROBLEMS WITH LOW COST, PERMANENT CALIFORNIA BENCHES!

. . . *famous since 1911*

Sturdy, graceful and comfortable, California Benches are standard in hundreds of cities in the U. S.
Constructed of reinforced concrete and seasoned wood, they cost little more than flimsy wooden benches — and upkeep is negligible!

Eleven Factories to Serve You

Molding Equipment
Provided in areas not serviced by our plants.

WRITE TODAY!
—for our free illustrated folder.

ART CONCRETE WORKS
PASADENA, CALIF.

OAKLAND, CALIF.
JACKSONVILLE, FLA.
BIRMINGHAM, ALA.
SOUTH HOUSTON, TEX.
SAN DIEGO, CALIF.
PORTLAND, ORE.
HIALEAH, FLA.
CHARLOTTE, N. C.
SHREVEPORT, LA.
PHOENIX, ARIZ.

International Harvester Appointments

The Industrial Power Division of the International Harvester Co., Chicago 1, Ill., has appointed W. M. Holland to succeed W. M. Parrish in the supervision of engine sales; I. P. Payne, to assume charge of distributor accounts, and H. R. Carlson, to succeed Mr. Payne as southwest region manager.

W. M. Holland

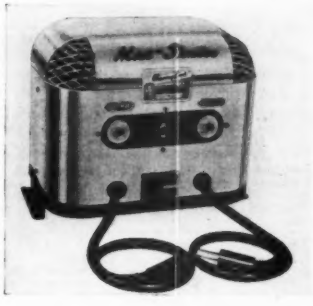
Mr. Holland has been an official of the industrial-power division since it was organized in 1944. Until 1948 he was division manager of supply and inventory. After that he held the position of assistant manager.

Formerly manager of industrial power sales for the southwest region, Mr. Payne now holds the title of assistant division-sales manager.

Associated with International Harvester since 1919, Mr. Carlson has specialized in industrial sales since 1934. Texas, Oklahoma, Arkansas, Kansas, Missouri, Louisiana, and New Mexico are on his new roster.

Three new appointments on the advertising and sales promotion staff are those of W. H. Kuhlman as general supervisor of advertising and sales promotion, succeeding Donald Jones, who is now general supervisor of refrigeration advertising and sales promotion. J. R. Roberts is the new supervisor of sales promotion.

No Radio Interference With This Welder



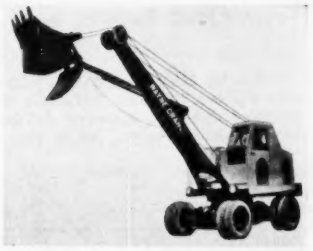
Mid-States Equipment Corp., Chicago, Ill., has introduced a remote control for its high-frequency arc stabilizer units that automatically shuts off operation excepting when the electrode is actually in contact with, therefore grounded by the workpiece. As a result radio listeners in the vicinity of electric welding equipment get a real break with the elimination of virtually all high-frequency-equipment interference.

Five Machines in One

The Model 22 crane manufactured by the Wayne Crane Div., American Steel Dredge Co., Inc., Fort Wayne 1, Ind., operates as a shovel, trench-hoe, dragline, clamshell, and crane.

For greater mobility and faster operation, the Model 22 moves on dual rubber tires and has four-wheel drive to provide dependable traction.

When the crane is operating as a shovel, the bucket capacity is ½ cubic yard and the maximum digging radius is 21 feet 5 inches. As a trench-hoe, the length of the boom is 15 feet, and the digging depth below ground level is 13 feet 5 inches. When the machine is used as a dragline, clamshell, or crane, the operator has a 30-foot boom to work with, and with the clamshell attachment can dig to a depth of 15 feet with the boom at a 45-degree angle.



● Hardie Sprayers have the power, capacity and stamina to spray the tallest trees from the ground. Motor truck mounted Hardies are very popular for shade tree and park spraying. Many such Hardie fleets are protecting forest trees in cities of the world.

The multiple utility of a Hardie High Pressure Sprayer gives it tremendous investment and convenience value. It is readily and inexpensively converted to a dozen different spraying jobs. It can be used for both high and low pressure application.

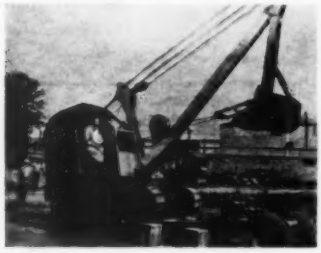
A wide assortment of booms and guns meets any requirement including fire control. The Hardie pump will handle any spray material.

Hardie Sprayers are built in sizes ranging from 4 G.P.M. at 300 P.S.I. to 80 G.P.M. at 1000 P.S.I. Standard and custom built units and fleets are available in an infinite variety of assemblies both engine-equipped or with truck or tractor power take-off. Write for catalog and complete data.

THE HARDIE MFG. COMPANY
Los Angeles 11, Calif. • Hudson, Mich. • Portland 9, Oregon
Export Dept., Detroit 26, Mich.
Canadian Office, Clarence W. Lewis & Son Ltd.—Grimsby, Ontario

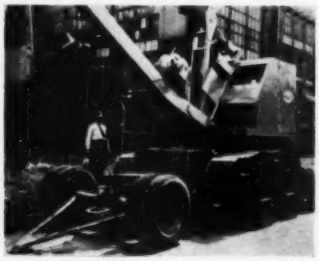
Quick Loading on Trailer for Excavator Transportation

The Insley Mfg. Corp., Indianapolis 6, Ind., makes a Skeleton Trailer for the transportation of its excavator that features quick loading and low height.



First, the front wheels of the trailer are removed and loading blocks are placed alongside the trailer. The excavator is moved forward with its treads on the blocks.

The cab is turned 180 degrees so that the boom is above the end of the trailer from which the wheels have been removed.



A chain is attached to the boom and is used to lift the front of the trailer and then lower it on to the king pin of the front wheel assembly.

The chain is removed from the boom, the machine is clamped to the trailer, a tow rod is attached to the truck, the truck and trailer with the excavator on it are moved forward to remove the blocks, the boom is lowered—and in ten minutes the excavator has been loaded and is ready to roll.

Straighten Bent Meter Posts In Three Minutes

The Postratner is a device for straightening bent metal poles, such as those used for parking meters or directional signs, in a matter of minutes, as a cost of just a few cents, and without pavement breaking and repaving.

A 33-inch U-shaped steel base is placed over the post base to prevent the post from becoming loose in its concrete bed. A clamping collar is affixed about 9 inches above the bend and then a 1½-ton hydraulic jack straightens out the bend in the meter or sign post.

All parts of the Postratner can be assembled on a rack affixed to a motorcycle side-car, and the only tool required is a bolt wrench. Typical working statistics for this mechanism manufactured by the Barber Postratner Co., 112 Irvington St. Annex, New Haven, Conn., show that it takes about three

minutes, one workman and 6 cents to straighten a pole, as opposed to several hours, several workmen, and $6 by conventional methods that require the removal of the post from the sidewalk.

Free literature on request

SAVE MONEY! SAME TIME! With the UNIVERSAL CONTROLLED-FLO TRAFFIC LINE PAINT STRIPER with long lasting ALL METAL Paint Spreader.

NO BRUSHES — ENGINE — HOSE — COMPRESSOR — PUMP — JETS

Combination of gravity feed & all-metal, shoe-type spreader eliminates many problems.

Use any zone or striping paint of standard manufacture in this new Universal Controlled-Flo Traffic Line Paint Striper. Indoors or out, on any road surface. ROLLS paint on easily, quickly. 38" spreader offset to afford clear view of line all times. Finger tip control of flow.

Standard model: All welded steel chassis & 9 gal. tank with funnel bottom to use all the paint. Cast aluminum alloy wheels, all metal spreader. Furnished in widths from 2" to 8" spreaders interchangeable but not adjustable. Weight 60 lbs., 42" long, 24" wide, 38" high. All parts standardized & interchangeable for replacement.

With one spreader **$150**
Rubber-tired ball bearing wheels $15 extra.

Model B, 5-gallon tank capacity $90
Spreaders: 2" to 4" width $20; 4" to 8" width $25.

UNIVERSAL MARINE & MFG. CORP.
137 Alexander St., Yonkers 2, N. Y.

Add Life To Your Battery

A D · X 2*

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Use of thousands of 12-inch Argus pattern glass blocks in the construction of the Mitchell power station of the West Penn Power Co. near Monongahela, Pa., guarantees an abundance of natural daylight to employees, while reducing harmful dirt infiltration and aiding in temperature and humidity control through preventing heat loss.

The blocks are manufactured by the Pittsburgh Corning Corp., Pittsburgh, Pa.

Chester E. Albright, Of Albright & Friel, Dies

Chester E. Albright, president until his retirement in 1945 of the consulting engineering firm of Albright & Friel, Inc., 1528 Walnut St., Philadelphia 2, Pa., died recently.

Mr. Albright's career had included employment as Chief Engineer of the Bureau of Engineering and Surveys for Philadelphia, and his engineering activities during his 55 years of continuous private practice extended through the United States and in Canada, England, and Buenos Aires.

Front-Drive, Rear-Steer Tractor Mower

The Worthington Mower Co., Stroudsburg, Pa., is manufacturing a new tractor for gang mowers. The Model F Chief features front-wheel drive, all mowers in front of the operator, rear-wheel steering, and improved balance. Seventy-five per cent of the tractor's weight is on the front wheels, resulting in increased traction and full utilization of its engine power.

A turning radius of 69 inches, full visibility of mowers, and ability to take from 1 to 9 mowers, either balanced on both sides or unbalanced on one side—all add up to closer and more uniform mowing, as well as savings in operational costs.

Edwin J. Lame Dies

Edwin J. Lame, vice-chairman of the Board of the R. D. Wood Co., Public Ledger Bldg., Philadelphia 5, Pa., died recently at the age of 77 following a brief illness.

Mr. Lame started with R. D. Wood as an office boy in 1887. In 1918 he was elected vice-president and held this position until 1947 when he resigned.

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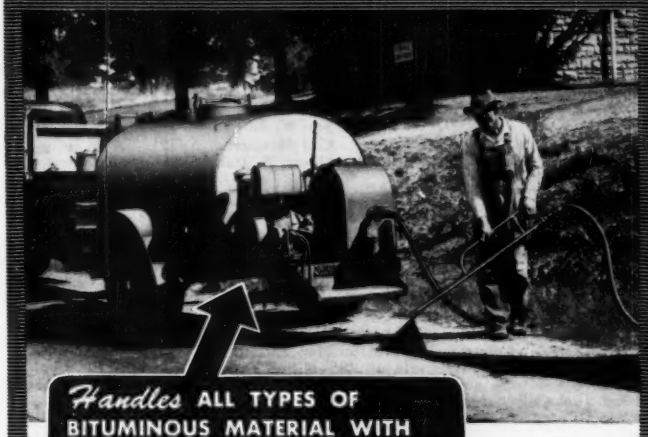

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North Dakota State law now prohibits parking meters.

Can quote very attractive price. Write,

H. T. Hintgen, City Auditor,
Wahpeton, North Dakota

Manual Parking Meters For Sale

The use of parking meters is now prohibited by law in North Dakota. Therefore, the City of Minot has for sale 374 one-hour, penny-nickel and 181 two-hour, penny-nickel Miller meters. The one-hour meters were installed in May, 1949, and the others later. They were recently placed in storage.

The City will be pleased to receive offers to purchase.

Jay W. Bliss,
City Manager,
Minot, N. Dak.

For Sale Manual Parking Meters

The City of Dickinson, N. D., will receive sealed bids at the office of the City Auditor on May 23, 1949 at 2 o'clock P.M. for the sale of 285 Miller Parking Meters (without posts) all in good working order and packed for shipment, FOB Dickinson, N. D.

A new State law prohibits parking meters in North Dakota.

If you contemplate the installation of parking meters, this is your opportunity to save money.

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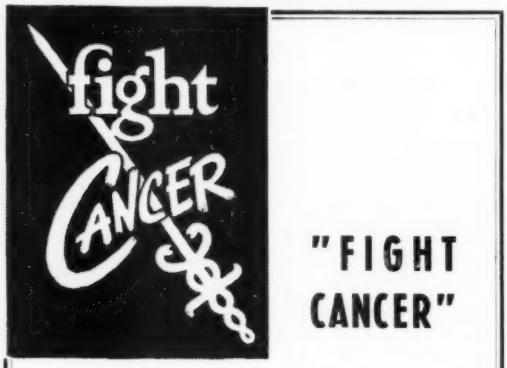

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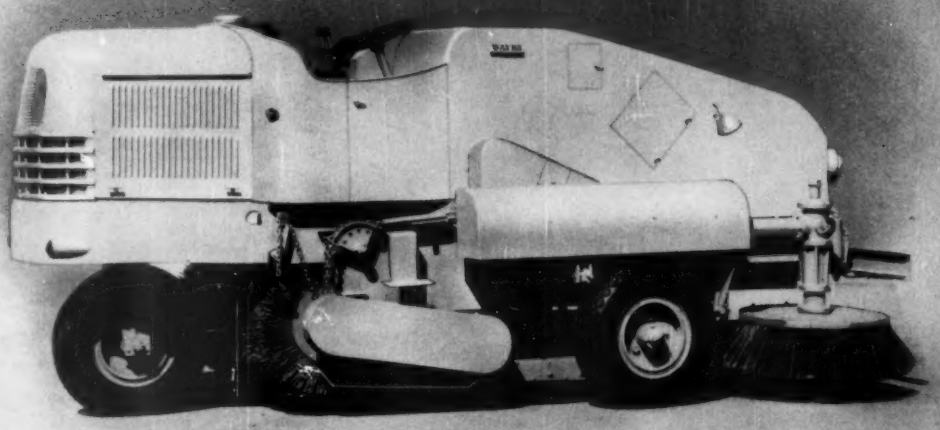

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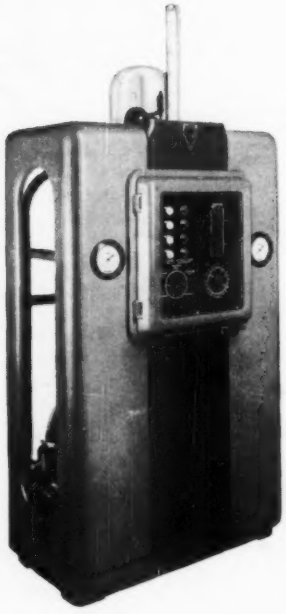

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(1) Disinfection
(2) Odor Control
(3) Reduction of corrosion and concrete disintegration
(4) B.O.D. reduction
(5) Improvement of settling
(6) Conditioning of return supernatant liquid
(7) Prevention of sludge bulking
(8) Sludge conditioning
(9) Adjunct in chemical precipitation
(10) Trade waste control
(11) Effluent sterilization

Best of all, this "Siva" is available to work for you at wages that everyone can afford. The average installation represents less than 1% of total plant cost.

To get the complete story on the multiple advantages of sewage chlorination and on W&T Equipment backed by over 35 years' experience, call in your W&T Representative. He'll be glad to help you

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